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In THE MUNICIPAL INDEX (an 850-page annual volume) readers will find much material, including articles, lists and bibliographies on a wide variety of municipal and civic subjects, not published in the monthly issues of THE AMERICAN CITY. THE MUNICIPAL INDEX is furnished to city and town purchasing officials without charge

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Artist's conception of Barbara Frietchie's Home in Frederick, Maryland

DeLavaud Pipe . . .
supplies and protects the historic town of Frederick, Maryland

FREDERICK, MARYLAND is associated in the minds of most Americans with the story of dauntless Barbara Frietchie —she who defied the invading troops to destroy her country's flag. Just how much the present-day town of Frederick cherishes the memory of its heroic daughter is shown by the beautiful Barbara Frietchie monument and the charming replica of her little home (shown above).

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DeLavaud Pipe is made in accordance with U.S. Government specifications. We are also furnishing this product in the various thicknesses and weights shown in the specifications of the American Water Works Association and the American Gas Association. The deLavaud Handbook gives complete information. Write for free copy today.

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UNEMPLOYMENT, HOUSING and Other Items for Mayors and City Managers

Aid for States and Cities in Planning Public Works Reserves to Stabilize Employment

A LEADING political scientist was recently asked when he thought the business depression would end. He replied, "My guess is that it will *begin* about 1935." THE AMERICAN CITY does not share this gloomy foreboding but it does wish to urge again, on mayors and other city officials, the important part which the long-range planning of public works might play in lessening the peaks and depths of business fluctuation.

As noted on page 93 of this issue Congress and the President have now officially approved public works preparedness as a policy of the Federal Government. Hardly a week had elapsed after the Wagner Act had been signed by President Hoover when Otto T. Mallery, a long-time advocate of long-time planning, had issued an excellent program in pamphlet form as an aid to states and cities. This includes, among other features, a model state bill to create a public works advance planning board, with administrative machinery for a six-year construction plan by every state construction agency, "with a helping hand to the counties and small towns."

As Mr. Mallery points out, "Cities would gain financially in three ways by increasing public works during a depression as a result of these measures: by paying less interest on bonds sold; by by paying less for the work; and by having to give less charitable relief. But experience shows that they do not and cannot get these benefits under existing legislative conditions and policies."

Copies of the pamphlet are obtainable from the author at 225 South 15th Street, Philadelphia.

Better Housing Standards by Compulsion and Cooperation

INDICATIONS point to a well-justified determination, by civic and social welfare leaders, to give intelligent builders the cooperation and ignorant ones the compulsion of increasing public control over housing and real estate developments. Two cases in point may be cited.

A constitutional amendment which would give Massachusetts municipalities the power of eminent domain in connection with replanning projects has been introduced in the 1931 Legislature of that state at the request of the Massachusetts Civic League. It provides that:

"The General Court shall have power to authorize cities and towns to take land, to hold and to improve the same, to lay out and construct new streets, parks and playgrounds thereon, and to subdivide the said land and to sell the same to limited-dividend corporations for building developments, organized as may be provided by act of the General Court, for the purpose of relieving congestion of population, remedying housing conditions detrimental to health, safety or morals, or of adapting the said lands to the social and business needs of the community."

In a statement urging its adoption, the League points out that this amendment to the state constitution would not authorize cities and towns to go into the housing business, but that, in modern large-scale housing developments, piecemeal acquisition of land, based on voluntary sale and purchase, is ineffective, because one owner can block the proper development.

The second indication above mentioned is the publication, in February issues of the *Real Estate Magazine*, of New York, and of *Better Times*, of a proposal by Harold Riegelman, counsel for the Multiple Dwellings Law Committee, of a ten-year plan for slum clearance in New York. To quote from the *Better Times* article:

"The time is ripe for the adoption by the city, in conjunction with the State Housing Board, of a ten-year plan of progressive condemnation or purchase by the city of strategically located blocks in slum areas, the use of portions of such lands for parks and re-located thoroughfares, and the enlistment of private capital in the development and management of new low-priced housing upon the balance of such land with adequate safeguards to the private investment and the public. The long-term leasing of such balance of the land as it is acquired by the city from year to year, to limited-dividend corporations on a basis not in excess of four per cent per annum of its net cost to the city, such rent to include taxes, is socially and economically sound and should result in a substantial supply of decent homes at rents which wage-earners can afford."

Such a program, in the author's opinion, will inevitably increase the value of uncondemned sections adjacent to land acquired by the city, warranting their rehabilitation wholly by private owners, and, he adds, "the improved health, contentment and economic productivity of a large portion of our population would be beyond measure."

Chicago Renominates Mayor Thompson; $54,600,000 in Bond Issues Approved

A HOT three-cornered fight contributed to the renomination, in the February 24 primary, of William Hale Thompson as Republican candidate for mayor of Chicago. "Big Bill the Builder" will have as his Democratic opponent at the election on April 7, Anton J. Cermak, now serving his third term as President of the Board of Commissioners of Cook County.

At the same primary thirteen distinct proposals for bond issues, totaling $54,600,000, were approved by the voters of the Chicago district, or parts of it, $36,000,000 being for sewage disposal projects of the Sanitary District; the other issues are for park improvements, piers, extension of street and boulevards, and street widening.

Community Chests Receive Increasing Support

THE strength of the community chest movement, and its importance in a period of widespread depression, are evidenced by figures compiled by the Association of Community Chests and Councils. The Association's executive director, Allen T. Burns, states that the chests of 180 cities which conducted campaigns in the fall of 1930 raised budgets aggregating 58½ million dollars to meet their 1931 needs, as compared with 54½ million dollars contributed in the same group of cities the previous year.

About 80 per cent of all the cities in the United States having 50,000 population and over, now have community chests; the total number of chest cities in this group being 177 as against 44 in which community chests have not yet been organized.

According to the records of the Association, there are now 363 community chests in cities large and small throughout the United States. Of these about 30 were added during the last calendar year, and Mr. Burns estimates that there may be as many more new chests recently formed in small towns from which the Association has not yet received reports.

Mayors and city managers can render important public service by co-operating as effectively as possible with the local groups in their respective communities which are seeking to increase the financial support of existing community chests or to organize new ones where needed.

Recent City Manager Appointments

N. J. BOSWELL was appointed City Manager of Decatur, Ga., on January 21, to serve for one year while J. S. Looney is on leave of absence.

A. B. Cherry, of Vancouver, Wash., was appointed City Manager of La Grande, Ore., on January 1, succeeding W. C. Crews.

W. C. Marlow was appointed acting City Manager and City Secretary of Eastland, Texas, on January 15.

Fred Mort was appointed City Manager of Summit, N. J., early in January. He succeeds John P. Broome, who had served for five years.

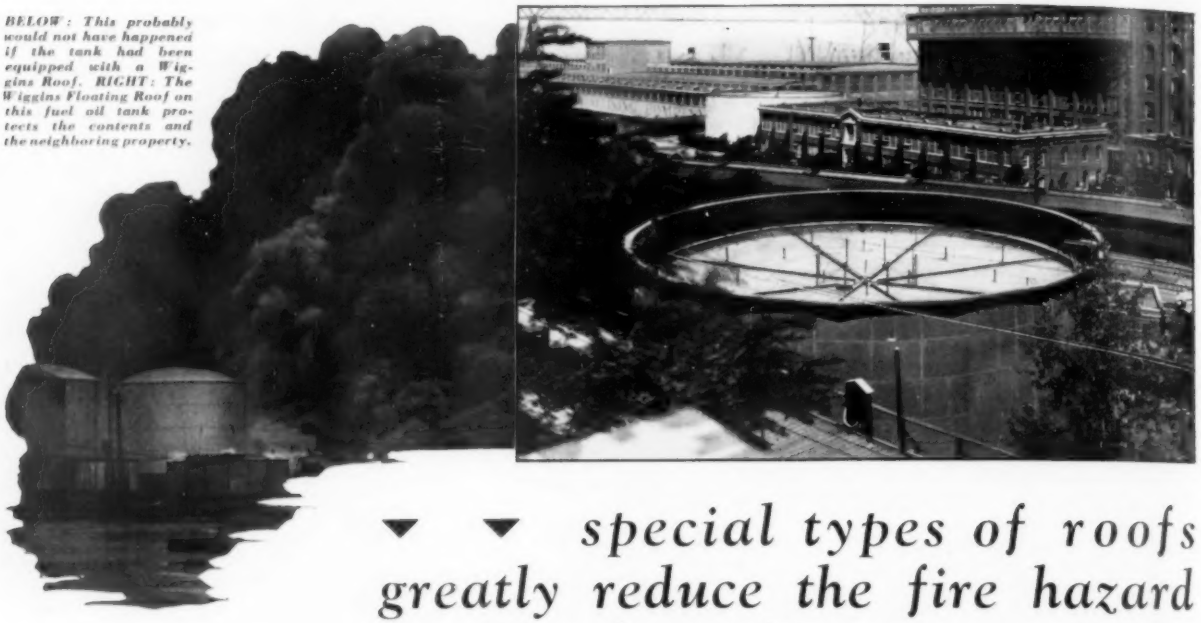
D. H. Sample became City Manager of Ft. Pierce, Fla., in January, suceeding Claudius E. Bennett.

Earl M. Sneckenberger, of Billings, Mont., has been appointed City Manager of Rapid City, S. Dak. He succeeds J. P. Soderstrum, who resigned to become City Manager of Grand Junction, Colo.

CLARENCE E. RIDLEY,
Executive Secretary, International City Managers' Association.

The modern trend in fire regulations for oil storage tanks

BELOW: This probably would not have happened if the tank had been equipped with a Wiggins Roof. RIGHT: The Wiggins Floating Roof on this fuel oil tank protects the contents and the neighboring property.



special types of roofs greatly reduce the fire hazard in oil and gasoline storage tanks.

Looking down into an oil tank equipped with a Wiggins Floating Roof. It rides directly on the oil, eliminating the vapor space in the tank.

The storage of oil and gasoline in municipalities is a "necessary evil." These products are used in every city, yet their presence too often means depreciated property values, high insurance costs, and elaborate municipal regulation to insure a fair degree of safety.

The development of Wiggins Roofs for oil storage tanks has simplified the problem considerably. These roofs ride directly on the oil in a tank. There is no space for inflammable vapor to form. Air does not come in contact with the oil, consequently the oil cannot become ignited. This is more important than auxiliary systems, for extinguishing fires after they have started.

Insurance rates for the entire district may be lowered when Wiggins Roofs are installed. Tanks may be placed closer together or closer to property lines with safety, an advantage in congested areas.

In short, Wiggins Roofs benefit everyone concerned. The municipality has lessened fire hazard; the neighboring property owners pay less insurance; the oil handler adds to safety in the community at no expense because the roofs repay their added cost through evaporation savings.

Every municipal officer should be acquainted with modern methods of fire protection so that he can help improve conditions in his city. We'll be glad to send you printed information on Wiggins Roofs.

We also build Horton elevated water tanks and standpipes for municipal use, smokestacks, cylindrical tanks, steel bins and all kinds of steel plate work.

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Cleveland...2236 Midland Bank Bldg.
Detroit.....1501 Lafayette Bldg.
Phila..2616-"1616" Walnut St. Bldg.
Boston...1501 Consolidated Gas Bldg.
Birmingham.....1501 Fiftieth St., N.
Dallas.....3306 Magnolia Bldg.
San Francisco.....1033 Rialto Bldg.
Seattle.....4343 Smith Tower
Houston.....1101 Electric Bldg.
Tulsa.....2425 Exchange Bank Bldg.
Havana, Cuba.....Apartado 2507

WIGGINS FLOATING ROOFS

AC-3 Gray

Pure Water—Man's Greatest Need

Items on Water Supply and Purification

New York May Be Permitted to Draw Water from Delaware River

THE recent recommendation to the United States Supreme Court that New York City be permitted to draw 440,000,000 gallons of water daily from the upper branches of the Delaware River represents a compromise proposal in New Jersey's suit to restrain New York City and State from withdrawing 600,000,000 gallons daily from Delaware River tributaries within New York State.

Special Master Charles N. Burch, of Memphis, who made the recommendation, approved plans for a water supply from the Neversink and East Branch Rivers, but disapproved plans to divert water from the Beaver Kill, Little Delaware and Willowemoc streams. He further recommended that New York draw 100,000,000 gallons daily from Roundout Creek and its tributaries which flow into the Hudson River.

The Special Master found that there was an emergency requiring an increase in the supply of present sources for New York, which would be unable to care for any increase in the city's population after 1935. The watershed which New York City sought to impound for its municipal water supply covered 610 square miles in Sullivan, Orange and Ulster Counties. Engineers estimated that 600,000,000 gallons of water could be taken from this area daily to supply New York City and intermediate municipalities.

New York contended that an even flow could be maintained in the Delaware River throughout the summer season by the release of a certain quantity of water daily from the reservoirs. New Jersey maintained that other sources were available to New York City which would not harm the flow in an interstate stream. It was proposed that New York should plan a watershed in the Adirondacks or on the east bank of the Hudson River.

New Jersey maintained that the water to be diverted belonged to the Delaware River watershed and that it would flow into the Hudson River watershed if impounded for city purposes, and that industry along the banks of the river in New Jersey would be harmed by the proposal to divert water. The flow of the river would be so reduced, it was said, as to make it impossible to use the stream for water power.

New York estimated that it would take twelve years to complete the watershed, at a total cost of $273,000,000. The watershed was the most economical to be had and would result in a supply of 600,000,000 gallons daily at a saving of about $75,000,000. The plan, it was argued, would involve a shorter length of aqueduct, fewer reservoirs and the acquisition of minimum real estate as compared with other proposals.

The report of the Special Master stated that the proposed diversion of 600,000,000 gallons of water daily would work some damage to the oyster beds of New Jersey, and for that reason he recommended that the Court should authorize the diversion which he approved and that such diversion should be carried out under a plan to regulate the flow in the main channel of the Delaware.

The decision of the Supreme Court will have a definite bearing on negotiations over a tri-state water treaty, long pending among the states of New York, New Jersey and Pennsylvania.

The Medina, Ohio, Water-Softening Plant

THE source of raw-water supply for the Medina water-softening plant is a small creek. The water is hard and at times very turbid and carries a high bacterial load. The plant was constructed to soften and filter one million gallons daily. It includes a dry-feed lime machine and solution-feeding devices for aluminum sulphate and soda ash, a gravity mixing chamber, two coagulation basins, carbonation diffusers at the effluent end of each basin, two filters of 0.5 m.g.d. each, a clear well and an elevated wash-water tank. The pumping equipment consists of two oil engines, each furnishing belted power to both low- and high-service pumps, and an electric generator for auxiliaries.

When the plant was constructed, in 1917, and until the past summer, the softened water was not treated with carbon dioxide and considerable incrustation of the sand resulted. No deposit of calcium carbonate has, however, been noted in the mains and meters. In order to stop the incrustation of the sand, a visit was made to various water-softening plants to make a study of the problem of recarbonation. It was decided to install the present system.

During cold weather gas is taken directly from the flue of the heating furnace in which coke is burned. In the summer a small household heating stove is set up outside the building, and flue gas from it is used for recarbonation. Gas is drawn from either of these sources by connecting the flues to the suction of water injectors. To get the necessary flexibility in operation, six injectors are provided. Four have nozzles $\frac{1}{8}$-inch in diameter and two have nozzles 3/32-inch in diameter. The injector throats of all are $\frac{1}{2}$-inch. When these throats were made of iron they became completely eaten away in about six weeks. The throats were then constructed of red brass pipe about 6 inches long and connected to 1-inch iron pipes which carry the gases down to a depth of 5 feet, where they terminate in the center of diffuser boxes located at the effluent ends of the coagulation basins. The covers of these boxes are 3 feet square. They are made of stainless steel and are perforated with 1/16-inch holes. The boxes are 12 inches deep and they have no bottoms. Three of these diffusers are placed in each basin.

When operating the plant at the rate of 0.5 m.g.d., only one of the large injectors is used in each basin. The power consumed in supplying water for all six injectors amounts to 4.5 horsepower, and only about 1.75 horsepower for the two injectors is required when operating normally at the 0.5 m.g.d. rate.

"Orsat" determinations on the gas show that a carbon dioxide content from 12 to 18 per cent is easily obtained. From 3 to 4 per cent escapes before being absorbed by the water. As no more submergence is possible when using these injectors, an endeavor is to be made to get greater absorption of carbon dioxide by substituting 1/32-inch holes in the diffusing plates for the 1/16-inch holes now in use.

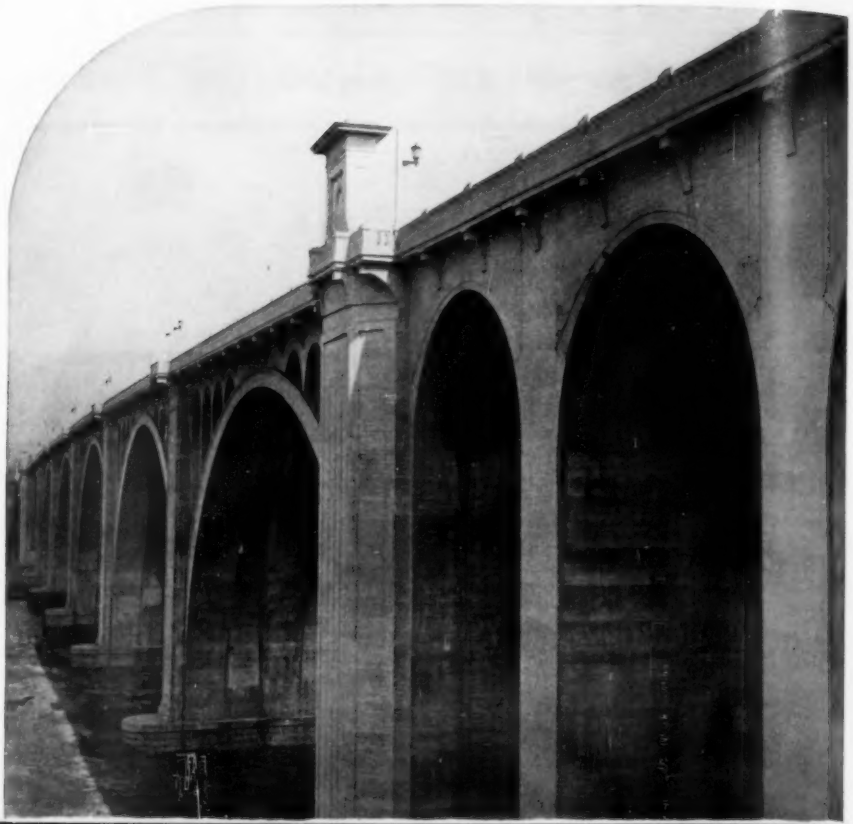
The unit cost of water treatment since the installation of recarbonation has amounted to less than for the same season last year. Coke consumption has amounted to approximately 200 pounds per million gallons.

From a paper by A. H. Fretter, Superintendent of Water Works, Medina, Ohio, read before the Ohio Conference on Water Purification.

Mudballs in a Filter

IN August, 1926, shortly after the opening of the filter plant operated by the Essex Border Utilities Commission, Windsor, Ont., which is jointly owned by nine communities and serves approximately 120,000 people, mudballs appeared. On examination it was found that a large portion of them had formed with a cotton seed as the nucleus. This seed had apparently been in the car in which the filter sand was loaded. Others were flat or almond-shaped. The former were found to a depth of 20 inches in the sand, while the latter remained on the top of the bed. They were removed by fishing the beds with wire mesh scoops while wash water was applied at a rate just sufficient to expand the sand. Their appearance was not noted again, to any extent, until November, 1928, when, following a period of slimy turbidity, they were found in all beds. Extra backwashing and fishing with the wire mesh scoops kept them under control and they disappeared early in December. These formations have never been larger than a good-sized bean and have been in evidence only twice in three years.

J. CLARK KEITH,
Chief Engineer, Essex Border Utilities Commission, Windsor, Ont.



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Is Vital to CHLORINATION

The world around, in every climate and in every service, dependability has placed W&T Vacuum Chlorinators to the front in big achievements of chlorination. • In the past year W&T Chlorinators participated in two vast projects of New York City—Hillview Reservoir and Croton Aqueduct. At South Yonkers and Mamaroneck, the Westchester County Sewage Commission picked W&T Chlorinators for dependable performance. • Years of reliable service on New Haven's water supply prompted W&T Chlorinators for their new East Street Sewage Station. And now, at Wanaque, New Jersey's great achievement, W&T Chlorinators are again chosen for dependable chlorination. • Thousands before these, some larger... some smaller... but all just as important to their own communities, acclaim the dependability of W&T Vacuum Chlorinators. • Such performance can be yours, too.

Ask for Technical Publication No. 38

"THE ONLY SAFE WATER IS A STERILIZED WATER"

WALLACE & TIERNAN CO. INC.

Manufacturers of Chlorine Control Apparatus

Newark, New Jersey — Branches in Principal Cities

FRANK L. THOMPSON
Supt., Water Works
Roodhouse, Ill.
(Appointed 1921)

GROVER L. WALTERS
Supt., Water Dept.
Fullerton, Calif.
(Appointed 1929)

HERBERT A. WEBB
Supt., Water Works
Bethel, Conn.
(Appointed 1921)

LUCIEN B. CRAWFORD
Water Commissioner
Kelso, Wash.
(Appointed 1929)

Who's Who in Water Supply

The 39th of a Series of Portraits of Water Works Officials Which Has Appeared Monthly Since January, 1928

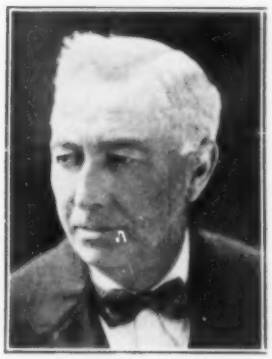
G. J. WOODHOUSE
Supt., Water Plant
Harlan, Iowa
(Appointed 1929)

HARRY W. BADLEY
Supt., Water Dept.
Carroll, Iowa
(Appointed 1927)

MARION H. BLAINE
Supt. of Utilities
Augusta, Kans.
(Appointed 1923)

GEORGE B. DORR
Supt., Water Dept.
Dayton, Wash.
(Appointed 1912)

DEWEY G. COFFMAN
Supt., Water Works
Sumner, Wash.
(Appointed 1926)



T. W. McMILLAN
Supt., Water Works
Mt. Pleasant, Iowa
(Appointed 1905)

ROSCOE R. HOWARD
Supt. of Utilities
Slater, Mo.
(Appointed 1924)

VITAS HROMEK
Supt., Water Dept.
Arma, Kans.
(Appointed 1917)

J. N. MARION
Supt., Water Dept.
Mulberry, Kans.
(Appointed 1917)

H. E. ISKER
Mgr., Water Dept.
Waseca, Minn.
(Appointed 1917)

Separate Sludge Digestion Plant, San Luis Obispo, Calif.
Burch & Beck, Consulting Engineers

Sludge Digestion in California

The plant pictured above was built as the first unit of a larger plant, to care for the city's immediate needs.

Such excellent results have been obtained that the enlargements have not yet become necessary.

The effluent from the Hardinge Clarifier is used as irrigating water on the city's farm, where alfalfa is raised.

Write for particulars

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WORKS AND MAIN OFFICE YORK, PENNA.
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Hardinge Equipment in the Sanitation Field

Clarifiers
Sludge Pumps
Sludge Digestors
Ruggles-Coles Dryers

for

Sewage Clarification
Water Purification
Sludge Digestion
Drying Activated Sludge for Fertilizer
Trade Waste Treatment

HARDINGE

Conical Ball, Pebble and Rod Mills, Ruggles-Cole Dryers, Feeders, Thickeners, Rotary Tubular Conveyors, Sanitation Equipment

Sewage Treatment Means Clean Streams

SEWERAGE and SEWAGE DISPOSAL

Removal of Stoppages from Sewers in Wilmington, N. C.

WILMINGTON, N. C., disposes of its sewage by the dilution method. The sewers empty directly into the Cape Fear River about 30 miles from the ocean, and the city has as yet no sewage disposal plant. It is possible that esthetic considerations will force or require the city to install treatment works in the near future, and for that reason the city is interested in this work.

In inspection and cleaning of the sewers, the cleaning gang makes regular rounds in the sections and on the sewers where trouble has been found before. As a stoppage begins to accumulate, fire hose is used to wash the sewer where convenient, and a Tiffin flusher from the street department is used where there are no hydrants available. It is not possible, of course, to reach all sewers before they get to the point of giving trouble, but a considerable portion of the trouble is eliminated before nuisance or inconvenience has been caused.

In the removal of stoppages, ordinary flat steel cable or cables made of telephone messenger wire, jointed sewer rods, and the regular stock type of scoops, are used. Generally there is very little trouble in removing stoppages, because they are caused by an accumulation of newspaper, orange peel, grapefruit skins and other such material never intended for the sewers. An ordinary spear head on the cable run through the stoppage loosens it up sufficiently to allow it to pass through the sewer. In the case of roots, with which the city has an ordinary amount of trouble, standard root cutters or sharpened-edge scoops are used or, in case the trouble is very bad and there is no pavement, the roots are dug out.

It has been found that digging is the best method because this eliminates the outside root and makes it possible to patch the hole where the root entered the pipe. In case the inside root cutter is used, the cut end of the root is always left and this immediately proceeds to grow again, producing another stoppage. Where an accumulation of roots is found in the ditch dug to remove them, about one inch of rock salt is placed over the sewer line, and it has never been necessary to go back for roots where the salt layer was thick enough. The salt kills the roots and prevents their further growth for a considerable length of time. Rock salt, particularly, does not dissolve very rapidly unless there is a large amount of ground water present.

The use of hydrochloric acid in the sewers has been seriously considered as a root eliminator or inhibitor, but this has never been used, as it was not known what effect this would have on house drains and other iron pipes with which the fumes would come in contact. Also, it was feared that the acid might have some effect on the fish life in the river, although the dilution is very great.

M'KEAN MAFFITT,
Superintendent of Water and Sewers.

Bids for Engineering Services

WITH each new group of municipal officials who ardently feel that the cost of all municipal work must be cut to the minimum and who believe that all manner of services for municipalities can be performed under the same contractual and monetary arrangements, there regularly recurs the appearance of advertisements asking for sealed proposals for the services of consulting engineers. One of the latest comes from a Southern California city of considerable size where it is desired to design and construct a system for the collection and delivery of all of the sewage of the city to certain specified sites. The request for sealed proposals reads:

"Each bidder must accompany his bid with a check upon some responsible bank, properly certified, payable to the City Clerk of the city of .... for a sum equal to five per cent of the aggregate sum of the bid, which check and the moneys represented thereby shall be held by the city as a guarantee that the bidder, if awarded the contract, will in good faith enter into such contract and give the security required for the faithful performance thereof. Such check and the moneys represented thereby otherwise will be forfeited to the city. No bid will be received that is not accompanied by such certified check."

The engineering profession subscribes to a code of ethics which permits an engineer to enter into an agreement with a municipality for his services, but it is unbecoming the dignity of the profession and distinctly unethical to enter into competition when offering engineering services to a city.

When a city asks for bids for any consulting engineering service, it is acting contrary to both sound professional and public policy. No good result can be had by thus attempting to secure for a city the expert technical services needed in sanitary and engineering work, for it is most probable that the bidders would be limited to unqualified or non-reputable parties even if any engineers should be tempted to bid.

Sewage Treatment Plants in New York State

THERE are about 343 sewerage systems in New York State at the present time. Some 292 of these are owned and maintained by municipalities or sewer districts. The systems are as a rule comprehensive and serve most of the built-up sections of the communities. Generally speaking, the private systems, of which there are 51, serve only small portions of villages and were originally established to serve small groups of people who realized the need of better and safer methods of sewage disposal than those furnished by the ordinary cesspool. As the systems were extended and additional population wished to be served, sewer associations or companies were formed. In a few villages in the state such companies have expanded until practically all of the built-up sections have been served by sewer systems. The State Department of Health feels that such methods of establishing sewer systems are to be discouraged since, in many instances, they follow no comprehensive plan, are often poorly constructed and provide no methods and offer little opportunity for the treatment of the sewage. The population served by such systems is relatively small compared with the total population of 8,800,000 which is now served by all sewer systems. The population so served represents about 78.8 per cent of the total population of the state.

In recent years the installation of sewage treatment plants has kept pace with the construction of sewer systems, and many cities and villages which have never treated their sewage are now installing plants not only to eliminate nuisances, but also as a matter of civic pride. There are now about 155 sewage treatment plants serving a population of 1,700,000, or about 20 per cent of the population served by sewer systems. About one-third of these plants provide simply for sedimentation, which is often sufficient treatment owing to the unusual opportunity for sewage dilution by the number of large streams and bodies of water throughout the state. In addition to the fifty plants providing sedimentation of the sewage, there are thirty other plants which have settling tanks with provision for chlorination of sewage effluent. They have received careful attention, have been operated under ortho-tolidine control, and have been very effective in their results. Daily records of operation are maintained and sent to the State Department of Health each month so that close cooperation between operators and the Department has been possible, to our mutual benefit.

CHARLES A. HOLMQUIST,
Director, Division of Sanitation, New York State Department of Health.

Sewerage and Sewage Disposal Statistics

THE 1931 edition of The Municipal Index will contain statistics on sewerage and sewage disposal prepared from original reports received from nearly 1,500 cities and towns in the United States. These statistics, which are similar to those published in the 1927 Municipal Index, are more complete and will be accompanied by footnotes.

"It's Servicised"

Chicago, Burlington & Quincy Railroad. C. A. Wiegel, *Special Engineer;* L. W. Skov, *Special Engineer of Design. Waterproofing by* Luse-Stevenson Company, Chicago. *General Contractor,* W. J. Newman Company, Chicago.

That's a guarantee of Quality Products, made from best materials, properly prepared, and delivered with dispatch.

This photo shows a view of the new track elevation work carried on by the Burlington in the vicinity of 16th and Canal Streets, Chicago, on which 65,000 sq. ft. of Servicised Waterproofing Protection Course Planking was used in 1930.

Servicised Protection Course—a blanket of tough resilient material—is now used by leading railroads and prominent engineers for protection to underlying membrane, and for additional waterproofing on viaducts, bridge approaches, roofs, etc. It is composed of specially blended asphalt, combined with asphalt saturated felt, and substantially reinforced with strong resilient fiber.

Write for detailed information, record of installations or samples.

Bridge Planking
Industrial Flooring
Sewer Pipe Materials
Expansion Joints
Rail Filler

Servicised Premoulded Products, Inc.

General Distributor for Servicised Products Corp.

53 West Jackson Blvd. Chicago, Illinois

Servicised Protection Course For Membrane Waterproofing

Construction and Maintenance

Engineering and Highway Departments

Only 3-½ Miles of Detours Maintained This Winter by Indiana State Highway Commission

DETOURS, viewed by road builders as the heralds of progress, meaning that while they are in force, improvements are being made, designed to permanently remedy faulty traffic arteries, nevertheless constitute the greatest annoyance attendant to road expansion. The fact that each road-building season sees less detour mileage carried through the inactive season is as much a matter of gratification to state highway officials as to the traveling public.

That only 3½ miles of detour roads are maintained this winter by the Indiana State Highway Commission, compared to approximately 125 miles of detour routes last winter, means a saving of hundreds of thousands of dollars in equipment and operating costs to the motoring public, and similar thousands saved to the state by eliminating the maintenance of long emergency routes.

Paving or bridge construction often necessitates a long detour, especially in Southern Indiana, where county and township roads are fewer and many are impassable during the winter. Frequently a long detour in more level sections may be fairly easy and inexpensive to maintain, compared to a short detour in a hilly region. Occasionally a watercourse spanned by only one bridge for many miles necessitates a long detour while the state bridge is being repaired, and frequently an emergency route is so narrow and has so many twists and turns that travel along it constitutes serious hazards regardless of the thousands of dollars spent by the Highway Commission to maintain it.

From a total cost of $192,243.27 for maintaining detours in 1929, this necessary expense of road construction was reduced to $178,929.11 in 1930, although nearly 100 miles more of roads were paved in 1930 than in 1929. With less than a dozen miles of detours maintained the early part of this winter, compared to more than 125 miles last winter and but 3½ miles maintained at this time, road officials are confident that with anything like a fair building season next summer, 1931 detour maintenance in Indiana will show a further reduction.

JOHN J. BROWN,
Director, Indiana State Highway Commission.

Treatment of Subgrade Soils in Minnesota

SUBGRADES in Minnesota are not oiled to prevent frost heaving or frost boils, but, rather, subgrades which are to be oiled are selected because they are not subject to frost boils. The experience has been that bituminous treatments on roads subject to frost boils do not have any appreciable effect in reducing the number or extent of the frost boils. The state now has about 250 miles of bituminous subgrade treatments on the primary system and quite a mileage on the secondary roads.

On new construction the oil is placed directly on the subgrade, which is about 30 to 32 feet wide between shoulders and should be smooth and have little crown at the time the oil is applied. Considerable care is taken to see that the subgrade at the time of treatment is well compacted, smooth, free from dust and dry. Weather conditions play a great part in the satisfactory application of oil on this class of work. Warm weather aids the penetration of the oil into the subgrade, and rainy weather tends to slow up the work because it is difficult to get the surface dried out sufficiently to obtain the necessary penetration into the soil.

The gravel is windrowed on the shoulder line, and an application of 1/3- to ½-gallon per square yard is sprayed on the road. This is usually heated to about 180 degrees Fahrenheit. During this time the traffic is carried on the opposite side of the road, but the following day, when the oil has soaked into the subgrade, traffic is transferred to the oiled section, and the other half of the road is oiled.

A second application of ¼ to 1/3-gallon is then made to the first half of the road and covered with gravel. The remainder of the road is given a second application, and the gravel uniformly spread over the entire road. The operation is so regulated that traffic can be carried at all times on a single road on which there is no free oil to spatter with reasonably careful driving. About 400 cubic yards of cover material per mile is used, and the thickness of the oiled surface is about ¾-inch.

This is not sufficient to carry heavy traffic or even to carry ordinary traffic if the soil beneath this thin crust is plastic. Heavy grading is employed in these sections, running 16,000 to 22,000 yards per mile for a 30- to 32-foot road. This brings the surface of the road from 4 to 5 feet above the bottom of the ditch line. The ditches are usually quite wide. After treatment the roads remain in good condition, while untreated roads absorb so much surface water that a small amount of traffic creates a very bad condition. This difference is most pronounced when the frost is coming out of the ground.

The initial cost of this type of treatment is about $1,400 to $1,600 per mile.

F. C. LANG,
Engineer of Tests and Inspection, Minnesota Department of Highways.

Gravel Street Maintenance in Leominster, Mass.

ON the many miles of rural dirt roads, many of them secondary lines, and on most of the residential streets of Leominster, from 8 to 12 inches of bank gravel is used. This is loaded at the pit with a gas shovel, removing the larger stones by throwing them off the trucks. The rest of the cobbles are about suitable for cobble gutters and shoulders and are picked out and left at the roadside for use in this way during the summer.

Graveling is done mostly during the winter and, with sewer construction, on which steam boxes are used if the frost is too deep, the same crews are kept busy winter and summer. Steam for the steam boxes is supplied from the idle steam rollers. If snow comes, the snow is pushed aside where graveling is being done, and work is resumed.

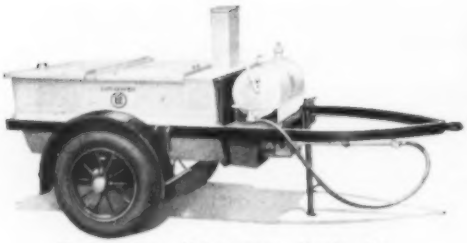
During the summer these roads are shaped, rolled, surfaced and dragged and about 4/5-gallon of cold application tar applied, covered with sand containing plenty of pea gravel, rolled on a wet day or after sprinkling with water, and exposed to traffic immediately. This is followed within two weeks with another 1/5-gallon of tar and covered with sand. Automobiles seem to improve the surface, except where they go around street corners, where a third application of tar and sand is often necessary.

Many of the roads are so loose that difficulty is experienced in rolling them, but after the blanket coat is applied they tighten up and come to a good surface, with tar to a depth of 1½ to 2 inches. For this reason a loose gravel is preferred to clay-bound gravel on which the bitumen lies as a top blanket and breaks through easily.

Such roads require a light surface application every two or three years and some cold-patch maintenance on spots where carelessness or tight-packed gravel did not allow proper application of the tar. The best results in re-treating the roads can be obtained by applying a spray of tar covered lightly with sand, allowing this to stand over night, dragging with a heavy steel road hone and blanketing with tar and sand.

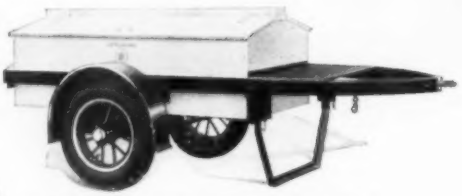
It is planned that later, as traffic develops on these streets, a binder course and mixed asphalt top will be applied to these substantial bases, which now show every indication of giving the necessary service, until all streets in this class have been so constructed.

A. T. RHODES,
Formerly Superintendent of Streets, Leominster, Mass.



Heavy Duty Maintenance Kettle No. 84-HD equipped with pneumatic tires, semi-elliptical springs, Timken roller bearings, Double Heat Circulation, hot and cold material separating compartment. This kettle is made in 110, 165 and 210 gallon sizes.

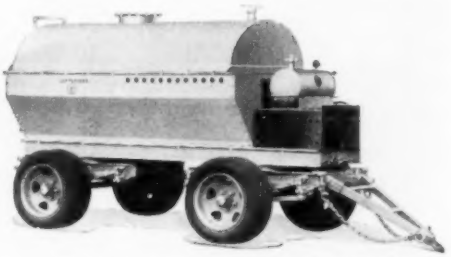
ANNOUNCING PNEUMATIC-TIRED MAINTENANCE KETTLES



Heavy Duty Tool Box No. T-1 equipped with pneumatic tires, semi-elliptical springs and Timken roller bearings. Capacities: 1 and 1½ tons. This tool box gives your tools the protection of All-Steel Construction.

TIMKEN BEARING EQUIPPED

Trail 'em FAST...



Distributor Supply Tank No. 97 equipped with dual-pneumatic tires, semi-elliptical springs and Timken roller bearings. Made in 600, 800 and 1000 gallon sizes. It has Double Heat Circulation which means faster melting of asphalt.

Asphalt Kettles (Oil and Wood Burning)
Asphalt & Emulsion Sprayers
Tool Boxes
Tool Heaters and Surface Heaters
Water Heaters and Concrete Heaters
Steel Motor Boxes
Salamanders
Joint Fillers
Squeegee Machines
Tools and Pots
Traffic Line Markers
Grout and Mastic Mixers

We aim to please. When highway men need something new, we try to give it to them. This time it's pneumatic tires to give faster trailing speed. Many highway departments have asked for such equipment, and here it is! Trailing speed—35 to 40 miles an hour.

Why so much speed? Most of your trucks are equipped with pneumatic tires, aren't they? There is nothing efficient about holding a pneumatic-tired truck down to a speed of 15 miles an hour to trail a solid-rubber-tired asphalt kettle. When both truck and kettle can travel 35 or 40 miles an hour, you are saving valuable time. That's why we are supplying many highway departments with pneumatic-tired asphalt kettles! They can make one kettle serve where two were used before!

Will pneumatic tires hold up? Better, much better than solid-rubber tires! They are made for high speed and they are well protected from the heat of the kettle. Littleford kettles, because of their Double Heat Circulation construction, radiate very little heat—it is absorbed within the kettle. But in addition, the pneumatic tires are well protected by heat guards between the tire and the kettle, thus forming a space for circulation of air and absolute protection for the tire.

Pneumatic-tired equipment was displayed by us for the first time at the recent St. Louis Road Show. This was after we had tried them out on our equipment for more than a year. The experiment has been successful. Let us tell you how you can speed up operations—send the coupon now!

Littleford Bros.
500 E. Pearl St.
Cincinnati, Ohio

Gentlemen:
Please send me complete information about Pneumatic-Tired Maintenance Equipment.

Name .....

Title .....

Street Address .....

City ..... *State* .....

3-31

THE SIGN OF A GOOD HEATER — LB — LITTLEFORD BROS. CINCINNATI OHIO

LITTLEFORD

Road Maintenance Equipment

SINCE 1900

LITTLEFORD BROS. 500 E. PEARL ST. CINCINNATI, O.

REG. U. S. PAT. OFF.

C. A. HEARTWELL
County Surveyor, Adams Co.
Hastings, Nebr.
(Appointed 1931)

H. V. MACKSEY
Supt., Public Works
Woburn, Mass.
(Appointed 1928)

BEN C. DALE
County Engr., Richardson Co.
Falls City, Nebr.
(Appointed 1924)

LORAN D. GAYTON
City Engineer
Chicago, Ill.
(Appointed 1927)

W. E. SHEDDAN
City Engineer
Jacksonville, Fla.
(Appointed 1921)

Who's Who in City & County Engineering

One of a Series of Portraits of Engineering Officials Which Has Appeared Monthly Since April, 1928

ELMORE F. KLEMENT
City Engineer
Fort Atkinson, Wis.
(Appointed 1924)

FRANK M. CHARLESWORTH
County Surveyor, Outagamie Co.
Kaukauna, Wis.
(Appointed 1922)

LESTER H. BALL
City Engineer
North Chicago, Ill.
(Appointed 1925)

WALTER A. BATES
Supt., Highways and Bridges
Darien, Conn.
(Appointed 1928)

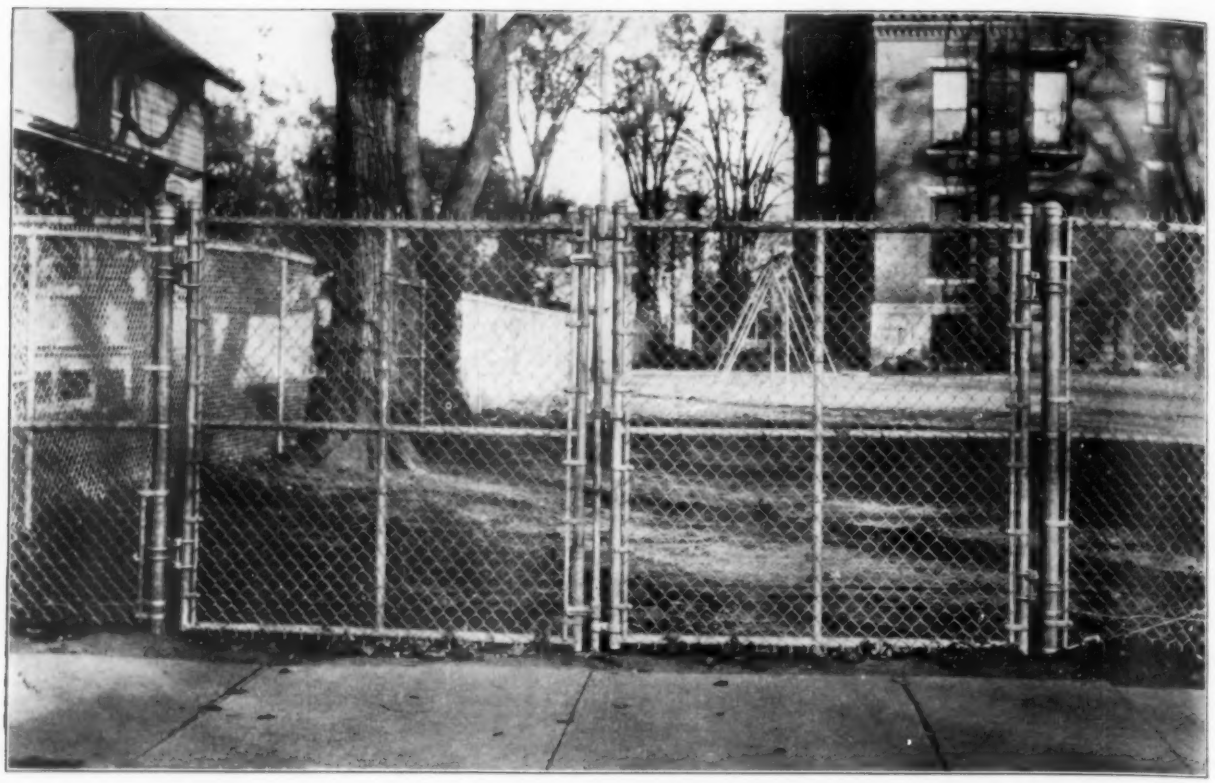
H. B. BLECK
City Engineer
Waukegan, Ill.
(Appointed 1927)

JOHN WILLIAM SMITH
City Engineer
Torrington, Conn.
(Appointed 1929)

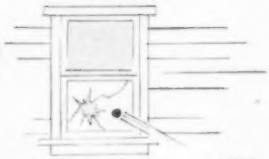
HOMER M. WARD
Highway Engr., Van Buren Co.
Paw Paw, Mich.
(Appointed 1921)

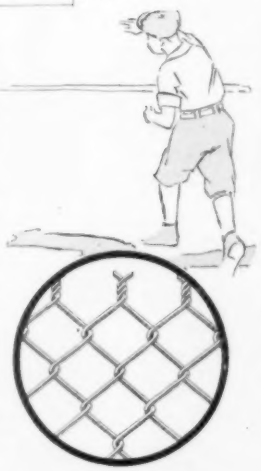
RUY HENRY CASON
City Engineer
Tampa, Fla.
(Appointed 1928)

J. G. PALMER
City Engineer
Kewanee, Ill.
(Appointed 1919)



Keep the Youngsters OUT OF MISCHIEF





Children are happiest, most contented, and least likely to get into mischief dangerous to mind, morals and body when they have an enclosed ground to play in. Enclose their playgrounds in good, substantial, non-climbable fence, and keep them from mischief and the dangers of automobile traffic.

It will pay any community to buy good fence. The slight extra cost of quality will be repaid many times over by the additional years of satisfactory service.

"Pittsburgh" Chain-Link Fence, the result of 30 years of fence-making experience, is built for long, hard usage. The fabric, designed to be resilient in collision, will retain its new, attractive appearance through many years of service. Made of basic, open-hearth, special formula, rust-resisting *copper-bearing* steel, it is heavily zinc-coated *after weaving* as an additional protection against corrosion . . . The sturdy steel frame is made of the same high-grade copper-bearing steel, and is also heavily coated with zinc.

Our nearest branch or distributors will be glad to figure on your jobs. Expert erection service is available wherever desired.

Pittsburgh Fence

CHAIN-LINK TYPE

New York
Chicago
San Francisco

Pittsburgh Steel Co.
720 Union Trust Bldg. Pittsburgh, Pa.

Memphis
Dallas
Syracuse
Detroit

Do you mention THE AMERICAN CITY? Please do.

"Our Best Playground Idea"

Carried Out in 1930

Swimming on Cincinnati Playgrounds

SWIMMING activities played a major part in the 1930 summer program of the Cincinnati playgrounds. All play centers, excepting one, are now equipped with at least one pool, and, in many instances, two swimming pools. Playgrounds having only one pool have a large combination swimming and wading pool, 80 to 100 feet long and 35 feet wide. Seven of these pools are completely enclosed with chain-link fencing, and all the others will be fenced as rapidly as funds become available. The shallow end of the new pools, 9 to 18 inches in depth, is separated by a wall from the deeper end, 2 feet, 6 inches, to 3 feet, 8 inches in depth, so that the youngsters have their fun in safety without interfering with the older group.

All the children using these pools are required to take a soap shower before going into the pool, the soap being furnished by the Public Recreation Commission. Suitable shower and dressing-room facilities are provided in every playground shelter building. Play leaders are required to instruct the children in the necessity of carrying out all the rules and regulations of sanitation and hygiene that are printed on placards and posted either inside or outside the shower. Certain responsible children are assigned as health guards to assist the play leader in body inspection and general supervision.

Every precaution is taken to mantain these pools at the highest sanitary standard. The water is changed daily. Every evening the pools are thoroughly scrubbed with stiff brushes. Every pool is treated with chloride of lime solution as often as the necessity is disclosed by ortho-tolidin test. This test is made several times daily by the playleaders. In addition, the pools are tested every week at irregular time periods by the Board of Health inspectors, and weekly reports of findings are submitted to the Public Recreation Commission.

A special supervisor of swimming is employed by the Public Recreation Commission. His duty is to see that all rules and regulations concerning the use of pools are observed; to teach beginners' classes to swim at regular class periods; to organize swimming meets for the various playground geographical section units; and to conduct the city-wide championship meet. A schedule of events is conducted for every one of the six geographical units and for the city-wide championship meet, for six groups: midjunior, junior, and intermediate boys; and midjunior, junior, and intermediate girls.

A compilation of figures for 1930 shows that 455 individuals and 85 relay teams took part in meets.

Besides these outdoor swimming pools, the Public Recreation Commission operates six indoor swimming pools located in public school buildings. As these pools have a maximum depth of 9 feet, a swimming instructor, an assistant, and a janitor are employed at all six locations. A special indoor championship meet is held for these pools.

It is believed that the eight per cent increase in playground attendance in 1930 was largely caused by the presence of these swimming pools on our playgrounds and their widespread use by the children last summer when the mercury reached 100° or more every day during the extremely hot weather.

ROBERT G. COADY,
Supervisor of Playgrounds, Public Recreation Commission, Cincinnati, Ohio.

Safety on the Playground

THE speed of the age of the twentieth century has brought us face to face with the problem of safety in protecting the lives, not only of adults, but more particularly of children. Mechanical devices are numerous, but human beings are prone to ignore inert objects, especially when mental attitudes present the urge to move on and take a chance. "Don't" signs grow monotonous and are eventually ignored unless the human consciousness is touched by a wrongdoing. A plan to appeal to the human instinct is by far more effective when dealing with children than through mechanical contrivances.

Our Playground Police organization, composed of boys and girls ranging in age between 13 and 16 years, has proved most effective. These young people absorb a reasonable amount of responsibility willingly and will compete on a merit-point individual basis, and in addition will compete for inter-playground honors in having the least number of accidents. The duties are numerous:

1. Proper use of apparatus
2. Guarding hazardous street crossings
3. Picking up broken glass and sharp rocks from the grounds
4. Segregating small children from the ball-game area
5. Guarding pool areas to prevent improper uses
6. Guarding new construction work on a playground

Many other duties could be enumerated which would not be classified directly as safety measures.

The Playground Police organization is worked out on a basis similar to that of a municipal or school police organization. Police are appointed or elected after careful observation as to their attitude toward other children, cleanliness, neatness, dependability, promptness, and judgment. Then in turn, from their own group, they select a Captain. The oath of office is given by the Playground Police Chief, who has complete charge of all policing work on all playgrounds. A badge of authority is pinned upon them and afterwards the work is distributed and duties assigned. The children are carefully observed as to their work.

Merit points are awarded from time to time on satisfactory work accomplished. The results are very pronounced. Grounds are kept free from glass and rocks, window glass in the buildings is protected, children are guarded across dangerous traffic streets, and very few accidents occur from play apparatus.

The impression of responsibility becomes a duty with these boys and girls and in the final analysis is education.

ERNEST W. JOHNSON,
Superintendent of Playgrounds, St. Paul, Minn.

Competitors for the Prize

The accounts on this page and those which are to follow are among the entrants in the competition which closed February 1, and which was fully described in the January issue, page 17.

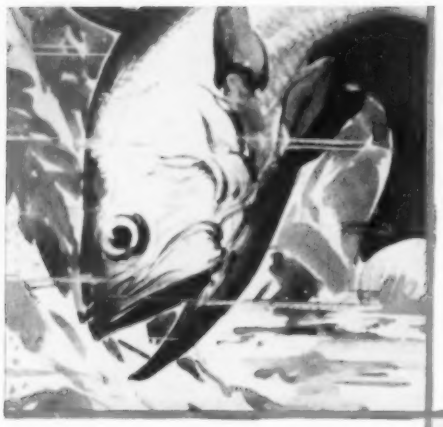
Competing papers are now in the hands of L. H. Weir, who is acting as judge, and notice of awards will be made at an early date.

Citizenship and Character Building

OUR "Citizenship and Character Building" program, used on both the Derby and the Shelton playgrounds in 1930 proved of unusual value and of tremendous appeal to boys and girls of practically all ages. The program was in the form of a competition on a point-rating basis, a total of 150 points entitling boys and girls of 9 years and over to the major playground emblem. Points were awarded on Character, Handcraft, and Athletics. Under the former head, the main divisions are Attendance, Leadership, Health, and Personal Conduct. A total of 70 of the possible 100 points for Character was required for all major emblem awards. A total of 50 points was required for handcraft work, a possible 10 points awarded for each project as graded by the supervisor on the basis of workmanship and effort. A total of 30 points was required on athletics.

A junior emblem was awarded boys and girls under 9 winning 50 per cent of the required points for the major emblem, and upon recommendation of the supervisor.

GEORGE W. ANGER,
Playground Commission, Shelton, Conn.



WHY GO DOWN *like a* FISH!

You can inspect or clean a Jennings *right out on the floor*

CONVENIENCE is the outstanding feature of a Jennings. There is nothing awkward about getting at this sewage pump. The entire assembly is installed on the floor, outside the pit. Nothing is submerged except the suction pipe.

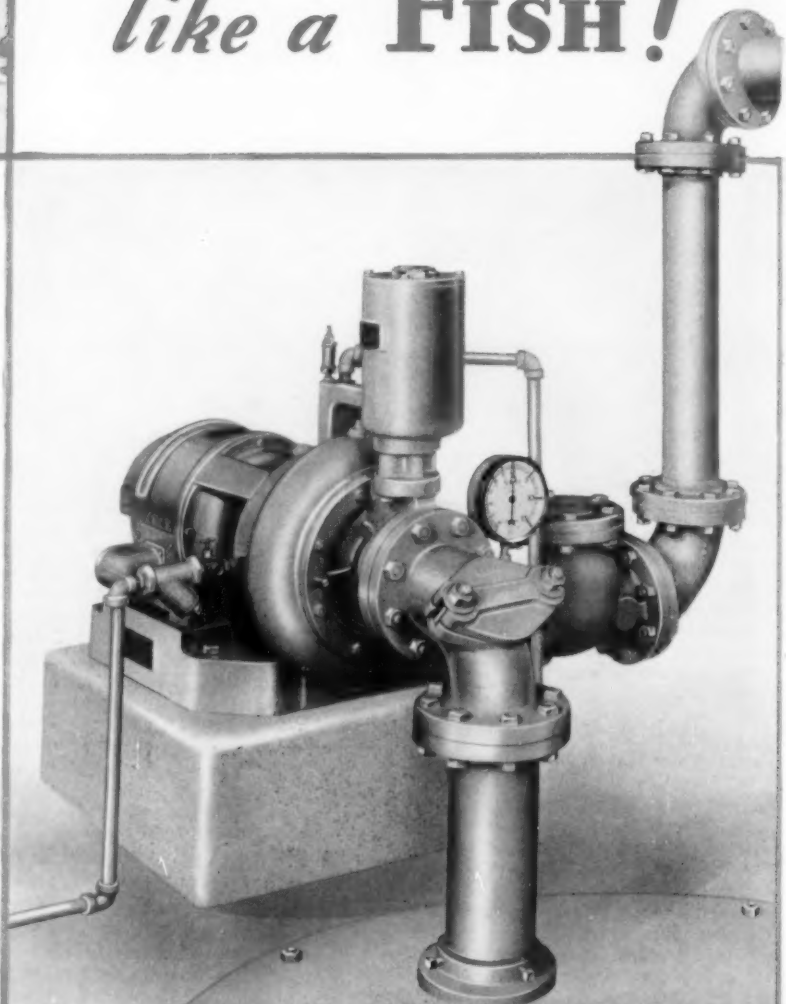
With every working part so accessible, easy work is made of inspection and cleaning. Opening up the pump and even removing the impeller take only a few minutes. Neither pit cover, piping nor shaft alignment need be disturbed.

Jennings Suction Sewage Pumps are furnished in capacities and heads to meet all requirements. All sizes are equipped with non-clog impellers. No screens are required.

Write for Bulletins 113 and 124

NASH ENGINEERING COMPANY
14 *Wilson Road, South Norwalk, Conn.*

Jennings
SUCTION
SEWAGE
Pumps



Note these 10 *features of Jennings Design*

1. Motor is commercial, ball-bearing type selected for dependability, always available from stock.
2. The only two moving parts are mounted on a single heavy shaft requiring but one stuffing box, eliminating flexible coupling.
3. A rugged supporting bracket, integral with motor end shield, makes pump and driving motor a single compact assembly in perfect alignment.
4. The non-clog impeller is accurately balanced, liberally proportioned, readily reached.
5. There are only two bearings to lubricate.
6. Suction elbow is fitted with hand hole plate to permit cleaning suction pipe and impeller without dismantling pump.
7. Priming unit is a simple, sturdy Nash Hytor.
8. Iron catch basin has gas tight cover.
9. Controlling float switch is totally enclosed and oil immersed.
10. Ball float has adjustable stop

METHODS and COSTS of REFUSE COLLECTION and DISPOSAL

A New Method of Garbage Disposal

EARLY in the summer of 1923 it was noticed that the sewage arriving at the treatment plant in Lebanon, Pa., contained some garbage, including cantaloupe and watermelon rinds, and that this material floated on the surface of the Imhoff tanks. If it was not scooped off, the floating garbage putrefied and gave off offensive odors.

It was believed that by separating the garbage into finely divided particles before it entered the tank, the particles would settle and putrefy. An experimental plant was built for grinding the garbage, the shredded material being then passed through an iron chute into the supply channel of one of the Imhoff tanks. The finely ground garbage settled immediately and entered the sludge chamber of the tank. To discover the further effects of the garbage on the sewage treatment, a nine months' experiment was started.

During this experiment the garbage was ground by an old lime crusher consisting of a roll and fixed jaw, the roll having projections and recesses to give a shredding effect. The hopper had a 14 x 14-inch opening at the top and a 4 x 6-inch opening at the bottom. It was approximately 15 inches deep and the roller was 2½ inches in diameter. With one man feeding the mill, garbage would pass through at the rate of 500 pounds in 15 minutes, or a ton an hour. The roll of the crusher was kept from clogging by a ½-inch stream of water from a garden hose passed into the hopper with the garbage. About 4,000 pounds of garbage were run through this grinder daily. This is about one-sixth of the garbage produced daily by a city of 25,000 population, so the east tank of No. 2 Imhoff tank was used, as this constituted about one-sixth of the Imhoff tank capacity.

Assuming that the amount of garbage from a city of 25,000 is 10 to 12 tons daily, of which from 75 to 80 per cent is water, and that the volume of sewage treated at the disposal plant is about 2,000,000 gallons, or about 8,000 tons daily, of which about 0.2 per cent is solids, it can be seen that the total solid matter flowing into the tank is not materially affected by the addition of the garbage. Of course, the water must be separated from the garbage, and this is done very quickly and easily when the garbage is ground.

The experimental period produced answers to the questions raised regarding sewage plant operation. The amount of sludge was not materially increased, a change of less than 0.1 per cent being noted by actual measurements. The drying period of the sludge was not lengthened, nor was the fertilizing value of the dried sludge affected as shown by chemical analyses which were run during the progress of the experiment. The action of the tank was not harmfully affected, but rather was improved, there being less foaming than when the tank was working under ordinary conditions.

The plant for a city of 25,000 for the disposal of all garbage can be housed in a building 40 x 40 feet in plan with a concrete floor. The hopper of the grinder should be level with the floor so that the garbage truck can be dumped directly into the grinder. For a grinder, a bone mill with a nominal capacity of 20 tons a day, run by a 20-horsepower motor, may be used. It is estimated that such a plant, including the building, the grinder, and a drain connecting the grinder with the manhole in the outfall sewer, will cost about $5,000, depending upon the amount of garbage handled. The entire plant can be operated by one man.

The process was patented on June 23, 1925, by Dr. C. E. Fox, and William S. Davis, City Chemist and City Engineer, respectively, of Lebanon, and recently the patent rights have been purchased by A. A. White, Inc., Lebanon, Pa.

WILLIAM S. DAVIS,
City Engineer.

Christmas Brings a Problem to Providence

A PROBLEM of great importance to safety officials in dealing with the increased fire hazards created by the influx of Christmas trees, wreaths, trimmings, etc., and the increased quantity of inflammable materials used in wrapping and transporting gifts, is created by the holiday season. The Christmas tree presents the greatest fire hazard, not so much when freshly cut and shipped into the cities, but after it has remained in a home for several days and has become dry. Safety officials, through the medium of newspapers and radios, have warned the public against carelessness in the use of Christmas trees and in the disposition of waste materials.

In the city of Providence, R. I., it has been estimated that 25 carloads of Christmas trees, each car containing 600 bundles of from one to six trees, each, or a total of 50,000 trees, were received by rail. An unestimated amount of trees, wreaths, etc., was received by truck and by individuals who elected to go out and cut their own trees. Cartons, boxes, wrapping paper, etc., were increased twofold.

After the holidays all of the above are converted into waste materials and because of their highly inflammable nature constitute a menace to life and property if allowed to remain in or about dwellings or stores. The Incinerator Department of Providence started to receive cartons, boxes, papers, etc., two weeks before Christmas in quantities that ran from 75 to 100 per cent in excess of normal, and this continued until two weeks after Christmas. Christmas trees were received in large quantities from wholesale houses which had neglected to sell their quotas, as early as Christmas Eve. Immediately after Christmas the Department collected an average of 900 trees per day. This continued for about two months, the remainder of the trees coming in at random.

The Police and Fire Departments are vigilant in their campaigns against Christmas tree bonfires started by boys who assemble a number of trees in a vacant lot and light them. As soon as a fire of this kind is discovered, the Incinerator Department is notified and a truck is dispatched immediately to bring the rubbish to the incinerator, where it is safely burned.

With the combined efforts of the Providence Safety Council, and the Providence Fire and Incinerator Departments, it is estimated that nearly 100 per cent of this waste material was received at the incinerator. The convenience which the collection system affords to the householder should be an incentive to dispose of these materials in a quick and safe fashion and to discourage any desire to store these wastes in the home or business house.

IRVING STONE,
Superintendent, Incinerator Department.

Middletown Reclaiming Low Land for Park and Street Department Yard

GARBAGE, ashes and rubbish in Middletown, Conn., are collected together and disposed of by dumping on low land. The land which is now being reclaimed is owned by the city. One portion is destined to become a park and the other a yard for the street department.

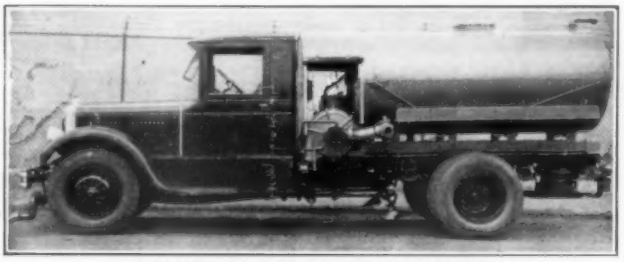
Two trucks are used for collections, which are made twice per week. Along Main Street, which is the business district of the city, collections are made each morning. In all, ten men and two trucks take care of the collection and disposal of garbage, rubbish and ashes. Four men are employed on each truck and one man on each dump to attend to the leveling.

The population served is approximately 15,000 and the appropriation for the past year was $21,000. Costs, which do not take in depreciation on the trucks, are slightly less than the cost of horse-drawn vehicles. Truck collections are quicker because of the long haul necessary to reach the dumps.

G. ALLEN SCHAEFER,
Superintendent of Public Works.

STREET FLUSHING
THE METHOD OF STREET CLEANING

MOTOR TRUCK FLUSHERS AND SPRINKLERS



SEMI - TRAILER AND FOUR-WHEEL TRAILER FLUSHERS AND SPRINKLERS

HVASS DOUBLE UNIT FLUSHER

Investigate the Advisability of Installing Hvass Flushers in Your City to Obtain

Sanitary, Economical and Efficient Street Cleaning Without Interference With Vehicular Traffic or Parking.

LOW COST **NO DUST RAISED** **SEWERS FLUSHED**

We Shall Be Pleased to Furnish Full Information on Request

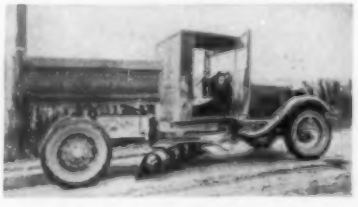
CHAS. HVASS & CO., Inc.

Manufacturers—Est. 1872

OFFICE: 508 EAST 19TH ST. NEW YORK CITY, N. Y.

At last a
SAFETY-V-SIDEWALK PLOW

Plow works on a pivot. When striking curbs, stakes, trees, etc., plow swings on pivot eliminating breakage to plow or truck. Now light trucks can be used in winter with a great saving over other methods. Drop two pins in the pivot device and you have a rigid V. Use in alleys, drives and streets.



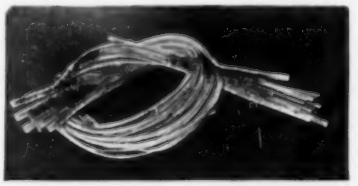
ROOT HYDRAULIC SCRAPERS

Maintain gravel, cinder, slag or earth streets with the ROOT Hydraulic operated speed Scraper. Replaces to a large extent the slow moving tractor, covers twice the mileage at half the expense. Send for additional information.

ROOT SPRING SCRAPER COMPANY

Kalamazoo, Michigan

HUNTSVILLE
HICKORY FIBER



for STREET SWEEPERS

HUNTSVILLE Hickory Fiber is a live, springy, flexible broom filler that handles with ease the heaviest street refuse—sweeps clean even the roughest pavements—and will give consistent and very economical service over a long period of time. Each piece of fiber is of the best selected green hickory, thoroughly cured, rigorously inspected and bears our unconditional guarantee.

Why not write for booklet "The Story of Huntsville Hickory?" It's interesting, as well as helpful.

FAULTLESS FIBER HUNTSVILLE HICKORY FOR STREET SWEEPERS

HUNTSVILLE FIBER & VENEER WORKS

FRANK H. FORD, President

HUNTSVILLE, ALABAMA

"Keep Your Streets Clean"

Items on Street Cleaning and Snow Removal

Snow Removal Considered an Emergency

APPROPRIATIONS for snow removal in Needham, Mass., are made in March of each year, the fiscal year coinciding with the calendar year. Appropriations include sanding both sidewalks and streets, repairs and new equipment. The 1929 appropriation of $7,000 was found sufficient for the purpose, so a similar sum was appropriated for 1930, although more money would have been granted if necessary, as snow removal is considered an emergency in this town.

Five 5-ton trucks and five tractors are used in removing snow from 3 miles of streets and plowing about 57 miles. This mileage covers 100 per cent of the business district, the residential streets being plowed but not cleared.

JOHN OVERTON,
Superintendent of Streets.

120 Miles of Streets Plowed in Evanston

EVANSTON, Ill., is a city of 63,338 population. For 1930 the snow-removal appropriation was $1,000. This sum takes care of clearing snow from one mile of streets in the business district and plowing 120 miles of residential streets. The actual cost was $12,745.75 in 1929. This included application of cinders, salt, and calcium chloride on pavements and walks on account of slippery conditions due to ice and snow. No snow-removal work is done in the residential districts. The equipment used consists of two tractors, two road graders for plowing the streets, and 24 horse-drawn plows for use on the sidewalks. Clearing is done by hand, loading the snow into trucks.

ROBERT M. BROWN,
Commissioner of Streets.

Windsor, Conn., Clears All Business Streets

WINDSOR, Conn., a city of 10,000 population, made an appropriation of $3,000 for snow removal in 1929-30, but decreased this amount to $2,000 for 1930-31.

Two truck plows, two one-man scrapers, two tractor plows, and as many trucks as necessary, are used to clear ½-mile of streets and plow 60 miles. All streets in the business district are cleared. No work except plowing is done in the residential areas.

C. A. MAGILL,
Borough Engineer.

No Separate Appropriation for Snow Removal

BOYNE CITY, Mich., does not make a separate appropriation for snow removal, the money being taken from the street maintenance appropriation.

About 35 miles of streets are plowed from center to curb. Business houses remove their own snow. Plowing of sidewalks has been discontinued, as observation during the last two winters showed that 95 per cent of the residents used the streets instead of the sidewalks when snow was on the ground.

A 3½-ton Republic truck equipped with a Wausau plow is found very satisfactory for the work in this city of 4,000 population.

HENRY M. STEIMEL,
Superintendent of Streets.

Gutters Opened With Road Grader in Wichita

THE total appropriation for street cleaning, including snow removal, in Wichita, Kans., has been $38,200 per year for the past two years. About 8 miles of streets are cleared of snow, and 20 to 25 miles in the residential section are plowed only. Ninety per cent of the streets in the business section are cleared of snow.

Wagons and trucks are used for hauling. These are loaded by hand or with a hydraulic lift shovel mounted on a Fordson tractor.

This city is not afflicted with very heavy snowfall and, as a rule, two or three days sees the most of it melted, so that it is unnecessary, except in the business section, to remove it. Gutters are usually opened on the more important residential streets with a road grader. There are a few places in the city where the snow drifts badly, but the streets can usually be opened with a road grader and a Caterpillar Thirty tractor.

H. P. MUSICK,
Director of Public Service.

No Snow Removal Necessary in Norristown Last Winter

THE snowfall in Norristown, Pa., during the winter of 1929-30 was so light that it was not necessary to use the equipment owned by the city, consisting of a Nelson loader and a snow-plow. The city may purchase another plow this winter if the conditions warrant it.

Each year the Highway Department is given an appropriation which is subdivided for the several needs of the Department during the year. If there is a big storm prior to December 1 and there is not a sufficient sum left from the appropriation to handle the work, it is necessary to borrow from the General Fund, as the fiscal year ends on November 30.

S. CAMERON CORSON,
Superintendent of Highways and Bridges

Phoenixville to Improve System

ONLY a limited amount of snow removal, consisting mostly of cleaning crossings, has heretofore been done in Phoenixville, Pa., but with the advent of the borough manager system of government, this work will be undertaken on a much larger scale. Snow will be removed from all business streets, and part of the residential streets will be plowed.

No appropriation was made for snow removal for the winter of 1929-30, but $1,000 has been set aside for this work during 1930-31. One 10-foot straight-blade plow, and trucks and shovels, comprise the equipment.

NORMAN G. YOUNG,
Borough Manager.

Courtesy International Harvester Co.

THE KILL-JOY!

A PUBLIC ALARM *with a* FINE SERVICE RECORD

Outdoor Diaphone installations provide very satisfactory service. Compressor is located inside building. Note location of Diaphone horn above the roof.

Fires demand emergency action, particularly in those cities and towns depending upon a volunteer fire department for protection. The quickest and most accurate method of summoning the volunteer firemen is by means of a public alarm. Such an alarm should have:

(1) Extensive carrying power
(2) A distinctive and alarming tone
(3) Good coding qualities
(4) Reserve capacity

For years the steam whistle has made a dependable public alarm for cities and towns; but during the past several years the electrification of factories and water works, which formerly supplied 24-hour-a-day, all-year-round steam for this purpose, has made it necessary for fire chiefs and other city officials to look elsewhere for a satisfactory public alarm.

The most satisfactory modern public alarm available to take the place of the steam whistle is the Gamewell *Diaphone.* Its carrying power is tremendous; its tone is distinctive and alarming; it will code rapidly; and it has a reserve capacity that acts as a safeguard against shut-downs in the electric power supply.

Furthermore, the *Diaphone* is the basis of a modern street fire alarm box system. Once it is installed, street fire alarm boxes of the latest type can be added later as the city grows, without discarding any of the original equipment.

Write for a copy of leaflet No. 2022

THE GAMEWELL COMPANY

NEWTON, MASSACHUSETTS

"A Box a Block"

POLICE—FIRE—SAFETY

Items for Departments of Public Safety

Physical Tests for Policemen

THE character and significance of the physical tests used by the New Jersey Civil Service Commission in selecting applicants for positions on police forces are discussed by W. Leonard Johnson, physical examiner for the Commission, in the *United States Daily* for February 4. The Commission has the duty of making tests for cities and counties that place themselves under its care, a number having done so. Mr. Johnson says:

"For a number of years, the New Jersey Commission has used practically the same medical and physical standards for the uniformed services as have been used in New York City, Chicago, Detroit, Los Angeles, Boston, and numerous other cities throughout the country. During the past year we have critically examined the physical tests which have been applied in New Jersey cities as well as elsewhere to determine, if possible, what each test actually measures, whether it is of any real use in the selection of the proper type of patrolman or fire fighter best fitted to cope with modern conditions.

NO UNIFORM STANDARDS

"The height, weight and age requirements for patrolmen and fire fighters are usually a part of municipal laws or city ordinances. No uniform standard requirements seem acceptable to all of the cities in the state. Some cities fix the minimum height for patrolmen at 5 feet, 7 inches; some 5 feet, 8 inches, and some at 5 feet, 6 inches. The State Police Department, which is a very effective organization, fixes the minimum height at 5 feet, 6 inches.

"The reason, perhaps, that these variations exist is because nobody has studied the question and because of the old notion that a big man is a strong man and hence a good patrolman. Aside from the psychological effect of the tall police officer on the general public, it is pertinent to inquire what particular advantage a stringent height standard gives.

"In order to find out whether any relation existed between height and strength, we ran correlation studies in height and total strength, using the readings of 450 applicants for patrolmen. No correlation was found to exist for men 5 feet, 6 inches or above. We than ran correlations for weight and total strength by taking the individual weight factor and correlating it with total strength. This revealed more significant data.

"While we are told that in the growing child up to maturity, weight and strength show a very high degree of correlation, in the 450 adult applicants for patrolmen, weight had little effect on strength. An inspection of the correlation chart shows these tendencies: Strength increases with weight from 140 to 165 pounds; above 165 pounds, the strength curve strikes a plateau which gradually falls as the weight increases, probably due to the presence of obesity and the accompanying sluggishness brought on by an overburdened skeletal frame; the optimum weight for strength seems to be between 160 and 185 pounds.

"If these tendencies by further experimentation may be demonstrated as facts, it would appear that we must revise our notions as to the relation of size to efficiency in police officers.

"A patrolman who enters the force at an early age, weighing more than 185 pounds, will very likely take on extra weight in a comparatively few years, and it is almost certain that this extra weight will be sufficient to reduce his physical efficiency and effectiveness as a peace officer. Proper training and periodical reexaminations will tend to keep down surplus weight and sluggishness, but older officers do not as a rule keep fit because they are not required to do so.

"The battery of physical tests used in this experiment included: Back strength, leg strength, grip strength, pectoral strength, traction strength, two dumbbell lifts, pull-ups, high jump, subjective rate on general physical appearance and development.

"Of these tests, the back, leg, grip, pectoral and traction pull all showed high correlations with total strength. Leg strength showed the greatest correlation. The weight tests seemed to be of no practical selective value. . . .

OTHER QUESTIONS RAISED

"This premilinary study opens up a field that is bound to be given more and more consideration as greater burdens are placed upon our police officers, and greater resourcefulness and endurance are demanded of them. There is little doubt but that we must demand a higher mental capacity for the police officer of the future than has been required in the past, and there is immediate need for us to know whether the patrolman with high intelligence, who is 5 feet, 6 inches tall, and of average strength and development, gives more promise in the effective administration of the law, in the control of crowds, and in the regulation of the motor traffic than does the officer of the old type, who is a giant in size, of limited capacity, and who, by reason of his size and weight, is ineffective where quickness and agility are required to meet the emergency.

"We also need to know what physical type promises long and satisfactory service, and what manner of man from the physical standpoint is least affected by the exacting duties he is required to perform. Until we follow the police officer through the years and check on his performance, his health and his continuing physical fitness, we shall not know much about the tests we give or their predictive value."

The Continuous Fire-Prevention Campaign

THE Chamber of Commerce of Youngstown, Ohio, is carrying on a continuous educational campaign for fire prevention in that city. It was launched on January 12. During the first week of the campaign, it was under the auspices of the city administration, which is succeeded each week by some other organization as sponsor. These organizations include the Chamber of Commerce, the Building Trades Council, the retail merchants, the various luncheon clubs, the women's clubs, the Parent-Teachers Association, the Boy Scouts, the automobile dealers, dry cleaners, etc. Each of these clubs has agreed to take the responsibility of carrying on this continuous program of fire-prevention publicity.

Safety Code for Mechanical Refrigeration Anticipates Public Compulsion

THROUGH the medium of the American Standards Association a committee including representatives of many related organizations, under the leadership of the American Society of Refrigerating Engineers, has drafted the American Standard Safety Code for Mechanical Refrigeration. It was approved by the A. S. A. in October, 1930, and has just been published in a manual issued by the Association (see page 167 of this number of THE AMERICAN CITY).

The code has already been adopted in its entirety by several cities and others are considering its adoption. It represents one of the most important instances of the necessary precautions being taken by industry to prevent improper installation or use of technical equipment instead of waiting to be forced to do so by public demand.

The manual gives, in addition to the code, a brief history of its development and the advantages of a uniform code.

"Motality"?

To the Editor of THE AMERICAN CITY:

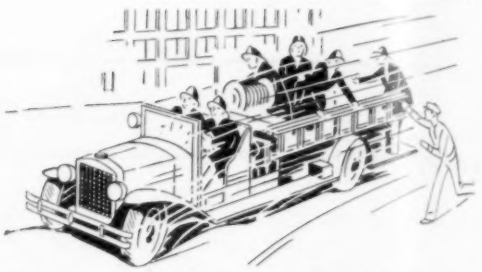
Your November issue, on page 23, discusses "autocide" vs. "motorcide."

Logically, "motorcide" kills the motor, as "autocide" kills the auto.

Would "carkilled" or "motality" (combining and condensing "motor" and "fatality" improve matters any?

D. H. HEPBURN, JR.,
Memphis, Tenn.

NEVER OFF THE TRACK



At the first sound of the bell, this Ahrens-Fox Model "V" is "rarin' to go." It is never "off the track."

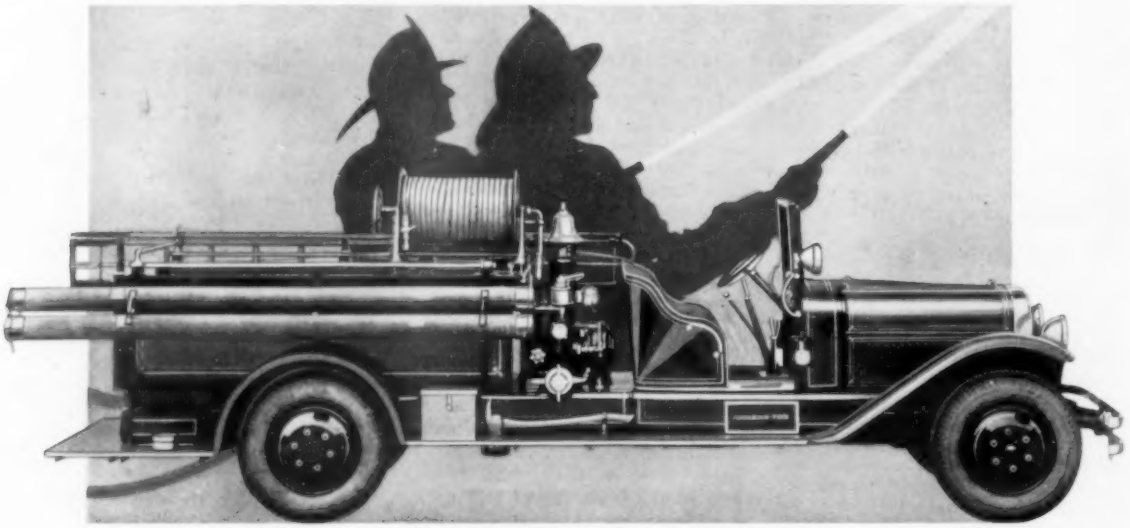
You know how important that is, especially in the smaller departments, or where there is only one engine house in the town. And it's this reliability that gave Ahrens-Fox the popularity it has today.

Model "V" is also used as an auxiliary where very large units are installed, or as a complete equipment for large industrial plants.

It will do more than you expect—and every time you expect it. It is of modern design, solidly constructed of the best materials, built low and "geared to the road." The specially designed motor develops 94-hp. —ample power for every speed and need. It pumps well over 500 gallons a minute at the nozzle and meets the demands of the National Board of Fire Underwriters.

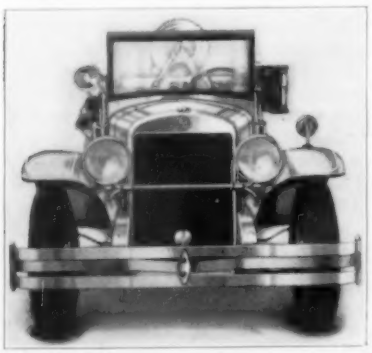
When after years of active service the Model "V" begins to wear, you will find replacement parts easy to install.

Mail the coupon for interesting details.

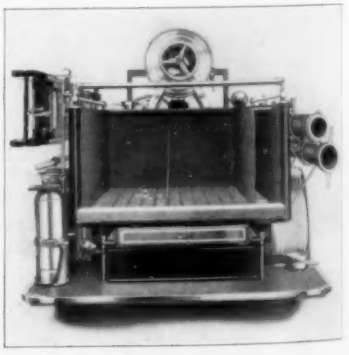


AHRENS-FOX MODEL "V"
Pioneer Unit of the new "Fox" Line

The Model "V" is equipped with an A-F Rotarystyle Pump Unit, giving the utmost in reliability, simplicity and efficiency. It delivers 500 gallons a minute at slow speed, and the streams are absolutely steady.



The body is a welded unit, eliminating any projecting bolts or rivets. Compartment on right carries 1½" hose. Pumping unit is out of the way, yet very handy. Apparatus is equipped with booster system, making it even more effective.



THE AHRENS-FOX FIRE ENGINE COMPANY

CINCINNATI, OHIO

Without obligation on my part, send complete details of this Model "V."

Name .....

Address .....

City ..... State .....

JOHN LUXEMBOURGER
Fire Chief
Santa Ana, Calif.
(Appointed 1918)

ROSS SCHMIDT
Fire Chief
Crookston, Minn.
(Appointed 1926)

LOUIS TURK
Fire Chief
Chisholm, Minn.
(Appointed 1928)

ALLEN H. JOHNSON
Police Chief
Fergus Falls, Minn.
(Appointed 1927)

F. F. McCLINTOCK
Fire Chief
Farmington, Mo.
(Appointed 1928)

Who's Who in Public Safety

The 39th of a Series of Portraits of Fire and Police Chiefs Which Has Appeared Monthly Since January, 1928

H. M. SERLE
Fire Chief
Fairmount, Minn.
(Appointed 1880)

NESTOR N. BRULE
Police Chief
Riverside, Calif.
(Appointed 1929)

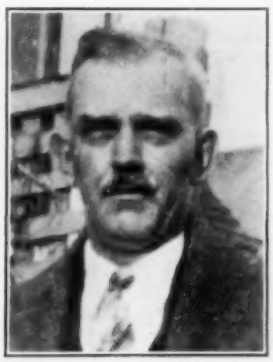
CHARLES J. MUTCHLER
Police Chief
Tiffin, Ohio
(Appointed 1923)

COURTNEY A. McKINLEY
Fire Chief
Clinton, Mo.
(Appointed 1928)

JAMES A. JOHNSON
Police Chief
Monett, Mo.
(Appointed 1923)

JAMES McCANN
Fire Chief
Stillwater, Minn.
(Appointed 1911)

JOHN ROY
Police Chief
Mahnomen, Minn.
(Appointed 1909)



B. A. HOWARD
Fire Chief
Kirksville, Mo.
(Appointed 1924)

CYRUS HARDEN
Police Chief
Owatonna, Minn.
(Appointed 1924)

Photo by Underwood & Underwood

In Kansas City... CAST IRON MAINS of the original water system are still in good condition

From prominent cities in every section of the country come testimonials to cast iron pipe's long life and durability. For instance, Kansas City, Mo. A recent letter from the Kansas City Water Department contains the following excerpt:

"The first cast iron pipe was laid in Kansas City about 1874, when the National Water Works Company was granted a franchise to supply water to the city. Some of this pipe is still in service. The lines that have been removed were laid by the old company and *were not removed because of any defects in the pipe* but were taken up to be replaced by lines of larger capacity."

The reason for the long life of cast iron pipe is its effective resistance to rust. Cast iron is the one ferrous metal for water and gas mains that will not disintegrate from rust. This characteristic makes cast iron pipe the most practical for underground mains, for rust will not destroy it.

The Cast Iron Pipe Research Association offers to taxpayers, engineers and city officials, detailed information regarding the use of cast iron pipe for gas, water, sewers, culverts and industrial needs. Address: The Cast Iron Pipe Research Association, Thomas F. Wolfe, Research Engineer, 122 So. Michigan Avenue, Chicago, Ill.

Reg. Trade Mark

CAST Q IRON

Bell and spigot cast iron pipe embodies the three indispensable features of a perfect pipe joint—provision for expansion, contraction and deflection.

Cast iron pipe bearing the "Q-check" trade mark is obtainable from the following leading pipe founders: Alabama Pipe Company, Anniston, Ala.; American Cast Iron Pipe Company, Birmingham, Ala.; James B. Clow & Sons, 219 N. Talman Avenue, Chicago, Ill.; Donaldson Iron Company, Emaus, Pa.; Glamorgan Pipe and Foundry Company, Lynchburg, Va.; Lynchburg Foundry Company, Lynchburg, Va.; National Cast Iron Pipe Company, Birmingham, Ala.; United States Pipe and Foundry Company, Burlington, N. J.; Warren Foundry and Pipe Company, 11 Broadway, New York.

CAST IRON PIPE

MARCH, 1931
Vol. XLIV, No. 3

The American City

470 Fourth Avenue
New York
50 Cents, $4 a Year

An Hour in a Police Department

A Radio Dialogue Between

ANDREW I. KAVANAUGH
Chief of Police, Rochester, N. Y., and
ALFRED GATES
Rochester Bureau of Municipal Research

GATES: *Chief, you have been in the police business a good many years, and from all reports have a progressive point of view regarding police administration. You came up through the ranks and have been on the firing line for over twenty years. Must be that you have formulated certain ideas for improving police work, particularly since you became Chief, in* 1927.

CHIEF: There have been times in my experience when I have been criticized for being too progressive, but I am that sort of a fellow who believes in keeping up with the times. The world of the criminal moves pretty fast as regards technique, and if we are successful in hunting him out we have got to keep one jump ahead of him. The old days of knock 'em down, drag 'em in and shake 'em down are gone forever.

MR. GATES INTERVIEWING CHIEF KAVANAUGH REGARDING PROGRESSIVE CHANGES IN POLICE ADMINISTRATION IN ROCHESTER

GATES: *I recall a short time ago that you made a statement to me that police work had taken on a broader and more scientific aspect in recent years and that only through the application of new principles could satisfactory results be accomplished. What, in your opinion, is the most needed thing in police work today?*

CHIEF: Boy, that's a big order, but if I were to answer in a few words, I should say scientific and businesslike procedure.

GATES: *I assume that since you, as Chief of Police, hold that point of view, certain of these scientific and businesslike ideas have been instituted.*

CHIEF: They certainly have, and if I may forget for a moment that I am the Chief of Police, I should like to make the statement that we have here in Rochester one of the best-equipped and most effective police departments of any city in our class. Understand that I am not out for any personal glory, because what has been accomplished has been possible by the willingness of my superiors to cooperate in bringing about progressive changes.

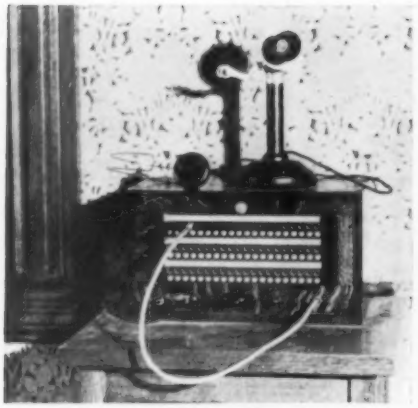
GATES: *Your modesty and confidence are most reassuring, Chief, but we researchers are like the man from Missouri, we've got to be shown.*

CHIEF: Well, I'll tell you what we'll do. We'll take a little trip of inspection through police headquarters and you can fire all the questions that you want to and I'll attempt to answer them. Then you can make up your mind for yourself.

GATES: *Before we leave your office, I should like to see that switchbox that you were telling me about which enables you to listen-in to any conversation coming into or going out of police headquarters.*

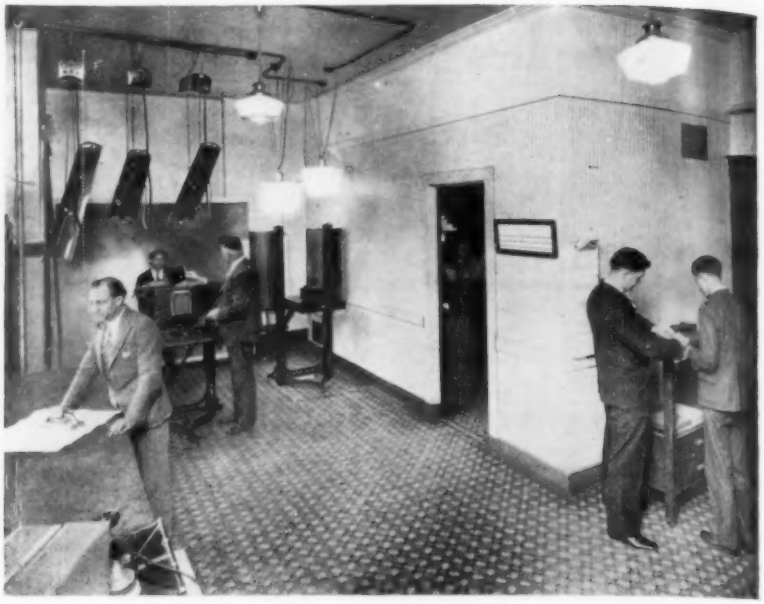
CHIEF: Oh, yes! Do you know what I call that thing? It's my morale builder. No one ever knows when I may be on the line. The other day a lady called in to one of the precincts and was complaining about a car that had been parked in front of her house for several hours. The officer at the other end of the line was a bit discourteous, so after their conversation I gave the officer a buzz and reminded him of the fact that courtesy to citizens is one of the essential duties of Rochester policemen.

GATES: *Well, that keeps you in pretty close touch with things. It is oftentimes convenient to know what is hap-*



THIS SWITCHBOARD IN THE CHIEF'S OFFICE ENABLES HIM TO LISTEN IN TO ALL TELEPHONE CALLS AT POLICE HEADQUARTERS

All calls to or from any part of the Department must go through a central board



FINGERPRINTING AND PHOTOGRAPHING SUSPECTS

Extreme right—Taking fingerprints
Left center—Photographing a suspect under Cooper-Hewitt lighting system
Extreme left—Preparing negative for dark-room development

pening and not have the other fellow know that you knew it. If it comes to a showdown, it sort of takes the wind out of his sails to tell him what has happened.

I have been hearing a lot of late about the Bertillon system. Let's go up to that office and take a look.

CHIEF: I am glad that you asked me about this, because we have some brand-new equipment there which gives excellent results. Let's take the elevator. The Bertillon division is on the fourth floor. Here we are. This new photographic equipment, which has been approved by the International Association of Identification, makes it possible for us to photograph a man in full size, or we can take group pictures in as many positions as we like. Group pictures you know, are oftentimes valuable.

GATES: *The whole lighting arrangement has been changed, Chief, since I was here before.*

CHIEF: Yes. These long tubular effects which you see hanging from the ceiling are Cooper-Hewitt lights which make photography accurate. It used to be possible for a criminal being photographed to distort his appearance and fool the camera, but with this new lighting arrangement, together with a very powerful camera, it is practically impossible.

GATES: *Have you changed your arrangement of the dark-room for use in developing your pictures? When I was over here a few months ago, you were working in very limited quarters.*

CHIEF: That part of the work has been completely changed. Our dark-room is now arranged so that system in developing has meant great speed and accuracy. We have a new projection printer which allows us to step-up our fingerprinting photographs to many times their natural size. Comparison is much more certain, because each little detail in variation is brought out. We have just taken on a man in this division to make mechanical drawings of scenes of crimes. The whole point to this new layout is that if we need pictures in a hurry, we can get them and still be sure that they are of the best. They are extremely valuable evidence.

CHIEF: That part of the work has been completely *out of place in a police station, Chief. I suppose it might be used as evidence against the Police Department.*

CHIEF: No, but it was used as evidence against a certain criminal some time ago. That was an interesting case. It shows the value of fingerprint work. A certain drug store was broken into and considerable liquor and wine was taken from the vault. One bottle of wine was found on the floor of the vault and was brought to our photographic department, where a fingerprint on the bottle was developed and photographed. We had no print in our files to compare with it and for the time being filed it. A couple of months later, two fellows were picked up by an officer on his beat who were apparently fooling around with an automobile, trying to get it started. There were foreign plates on the car. The officer started the car without any difficulty, which caused him to be a bit suspicious. These men were brought into headquarters and fingerprinted. To make a long story short, when the fingerprints were compared, one of them was identical with the one found on the bottle. The suspect was confronted with the evidence and not only confessed to the drug-store burglary but to several others.

GATES: *That's an extremely interesting story, Chief, but seems to me that the policeman who picked these fellows up was also on his job. I suppose that the appearance of the foreign license plates had something to do with it. I understand that the Police Department in* 1928 *opened a new automobile theft division which has worked very effectively. I remember that you gave me some figures relating to the effectiveness of the work of this new division. As I recall it, in* 1927 *there were* 1,293 *cars stolen and* 1,213 *recovered; in* 1928, *the number of cars stolen was reduced to* 868 *and the number recovered* 804, *and in* 1930, *there were* 499 *cars stolen and* 481 *recovered. How do you account for this great reduction in the number of cars stolen? This is interesting, of course, because it is bound to have its effect in reduced insurance premiums.*

CHIEF: It can be accounted for principally by reason of the fact that this bureau specializes only in the work of

automobile thefts and recoveries. This bureau works in very close cooperation with all precincts, automobile dealers, storage warehouses, gas stations, the State Motor Vehicle Department and police departments of other cities. There are twelve men on the staff who are constantly doing work on automobile thefts. We have sixteen prowl cars, operating day and night, which have displaced the old noisy motorcycles. I think we can expect even better results in the detection of criminals because we have recently let a contract to equip all our prowl cars, the director's and chief's car with radio equipment, which will bind the police department together for quick and efficient action. This is just another step to bring about speed and dispatch in police work.

GATES: *Talk about the use of radio. Here is still another evidence of science in the sign on this door. "Research Division." I have heard of the use of short-wave radio broadcasting in Detroit, but I didn't know that research was carried on as an adjunct of police administration.*

CHIEF: Yes, it is an important part of detective work. This division is in charge of the first college graduate that has ever been appointed to the Rochester Police Department. It is concerned with the examination and identification of evidence such as projectiles, cartridges, guns and blood stains. Working in cooperation with the Bausch and Lomb Optical Co. and the Eastman Kodak Co., we have been able to secure the latest instruments for microscopic and photographic work. As time goes on and we become more and more acquainted with this technical work, scientific evidence will be developed to a high point.

GATES: *Have you made any changes in the matter of statistics? I recall that a few years ago the individual precincts were loaded up with report work. It seemed to me, in going over some of these reports, that you were getting a large amount of information of little value and that too much time was being taken from actual police work in order to get out these reports.*

CHIEF: Oh, that's all been changed. We now have a statistical division which is responsible for the compilation and filing of all reports. All report forms have been completely revamped and reduced in number. We get only one daily report now from each precinct, and from it we are able to get all the information we need. Our records are all kept in accordance with forms recommended by the International Association of Chiefs of Police.

GATES: *It seems to me that you are making the work for the individual officers and men on duty much more pleasant and effective. That, of course, is bound to bolster up the morale of the Department. We hear a lot these days about this word "morale." What is your slant on it as a chief of police and have you done specific things in addition to what you have told me to build up a higher esprit de corps?*

CHIEF: Well, we have organized a police school which opened in 1928. Every man on the force under ten years of service is required to attend school one day a week for two hours. Once a year, all men with more than ten years

FILING ROOM OF BERTILLON OFFICE

THE CHIEF BERTILLON OFFICER ABOUT TO ENLARGE A FINGERPRINT

THE RESEARCH CHEMIST AND PHYSICIST AT WORK IN HIS NEWLY EQUIPPED LABORATORY

THE AUTO THEFT DIVISION
Force and office equipment of this branch of the Bureau of Police

of service must take an examination. This tests their knowledge of new laws and the latest methods in police procedure. If they pass, they are not required to attend school, but if they fail, they must attend until they pass. All new entrants must attend for eight hours a day for a month before being assigned to duty.

GATES: *Is the school in charge of some one who has had experience in this sort of work?*

CHIEF: Yes. The instructor in the school has had training in a police school in New York City. He has come up through the ranks and is well qualified to lecture on the fundamentals and details of police work. The course which he gives is endorsed by the Association of Chiefs of Police and the New York State Conference of Mayors.

GATES: *That's all very fine, Chief, from the point of view of effective police work, but how does it affect morale?*

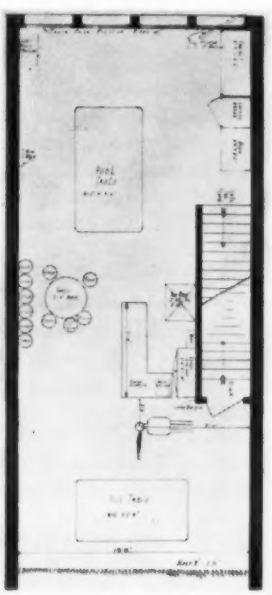
CHIEF: It simply means that the men know more about their jobs, which I believe is fundamental in making a fellow like his work, and that is the basis of morale. You know the boys don't like to be shown up before the others in this police work, and they are on their toes pretty much most of the time so they will not appear dumb before their fellows.

GATES: *I was up to Buffalo a short time ago and talked with the Chief there. He seems to think that the Rochester Police Department has developed quite a pistol team. He said that recently a match had been conducted between the Rochester and Buffalo teams and that the Buffalo boys had to shoot their best in order to beat you.*

CHIEF: Yes, in 1928 with our own labor we built a pistol range in the basement of an old city building. We have an ex-Army man as instructor, and the range is open for practice at any time. We hold competition matches between the east and west divisions of the city, and it is very encouraging to notice a keen interest in these matches and to observe how effectively the men handle their weapons. Practice is compulsory.

There is another thing which has done a great deal to satisfy the men and that is that extra or over-time duty has been cut to a minimum. A man's off-time is pretty dear to him, you know.

TARGET PRACTICE
The police range in the basement of Convention Hall



A USEFUL DRAWING
Mechanical drawing of the scene of a murder. This was used as evidence in the trial

GATES: *Well, Chief, I've got to be getting back to the office. I wish I might stay here and look around for a week. This has been a very interesting trip, and I congratulate you on the improvements in methods which you have instituted and particularly for what you are doing toward building morale, for, after all, morale is the heart of a police system.*

—Broadcast February 2, 1931, over WGY in the Municipal Radio Series of the New York State Conference of Mayors and Other Municipal Officials.

THIS MONTH'S FRONT COVER

On the Public Safety page of the January issue this magazine urged, as it has repeatedly done, increased activity in the elimination of grade crossings of highways with railroads, and more adequate safeguards meanwhile at existing crossings not now adequately protected. The month had scarcely passed before grim testimony to the need for continued hammering on this theme was submitted in the photograph reproduced on the front cover of the present issue. It is reported that the driver of the wrecked automobile shown in this picture was killed when his car was struck, on January 31, by a Long Island Railroad train at Jamaica. A similar fate awaits about two thousand American citizens during the remainder of 1931.

A Purchasing Outline for a Small Municipality

By PETER A. SMITH
Village Trustee,
South Orange, N. J.
Chairman of the Finance,
Street and Sewer Committees

IT is sometimes difficult in a small municipality to secure the benefits of a central purchasing and stores system when the amount of buying to be done would not justify engaging a full-time purchasing agent. The forms shown with this were designed for use by the writer, who has had a little experience in past years in buying for small and medium-sized firms, for use in two departments of the village government coming under his charge. They have now been in use about six months and seem to be doing what was expected of them. I shall try to explain their use.

Form 1-30
ORIGINAL REQ'D **No. 51** DATE 193

THE FOLLOWING MATERIAL OR SERVICE IS REQUIRED

ESTIMATED COST

FOR DEPT.

LOCATION

SUGGESTED SOURCE

ADDRESS

SIGNED TITLE

The Kerr Register Co., Dayton, Ohio

FORM 1 (5 x 3 inches)

Form No. 1

This form is the original requisition and comes to the part-time purchasing agent from any source. It may request a material or a tool in stores, or to be secured. It may ask for something never before used, or any suggested service. Its purpose is to advise the buyer or storekeeper of a real or fancied need. The foreman on the job sends it to the service station (combined garage, storeroom, office, etc.) for anything he needs. The head of a department turns it in for a new device or service or material he may care to try. In some cases all the data indicated on it are given; in others, only part. The form is in duplicate, so that the requestor may be able to follow it up.

When the purchasing agent receives it, it is filled, if it is routine and the thing asked for is available. If it is for new material or tool or services, he consults his chairman as to

Form 2-31
ORDER FROM **No. 272**

ADDRESS

SHIP VIA: OUR DEL'Y.—YOUR DEL'Y.—EXP.—P. P.—AIR MAIL—D. L. & W.—MESSENGER

THE FOLLOWING: DELIVERY REQ'D. BY 193

NO.	DESCRIPTION	COST

FOR

ORG. REQ. ATTACHED No. O. K.

DATE 193 SIGNED

PUR. ORDER No. ISSUED 193 (Over)

FORM 2 (6 x 4 inches)

PLEASE QUOTE PRICES ON MATERIAL OR SERVICES TO

DEPARTMENT OF

VILLAGE of SOUTH ORANGE, N. J.

ATTENTION OF

This Is Not An Order

Form 3-29
Req. No.
Date 193
By

DISPOSITION
File
Place Order
Add Information
Bring Up
P. O. No.
Date 193
Rush

SHIPPING INSTRUCTIONS

Our Messenger	Parcel Post	TO DEPARTMENT OF
Your Messenger	Air Mail	
Our Delivery	Express	
Your Delivery	D. L. & W. R. R.	
F. O. B.	Freight	

All materials furnished will be subject to inspection and test, and, if rejected will be held subject to order of shipper.
No charge will be allowed for boxing, cartage or packing.
Date of delivery must be specified. Your failure to insert shipping date may prevent consideration of your proposal.
Should you be unable to furnish articles according to our description or specification, and wish to offer a substitute, please advise in detail, we reserving the right to reject all or part of your bid.
Material must be delivered at place designated without freight, express, parcel post, etc., charges.
If the terms and conditions stipulated herein do not meet with your approval, advise us accordingly when quoting, otherwise we will consider your quotation to have been made under the conditions named.

ON THE FOLLOWING:

Quotations must be received not later than , 193

DEPARTMENT OF

Committee Chairman

Per

FORM 3 (8½ x 11 inches)

disposal, or he may in an emergency matter get the foreman to O.K. it.

Form No. 2

This is a purchasing requisition, the need for which may arise from an original requisition or from a low stock or from various causes. Here again, part or all of the information asked for on it may be given. It may come from the foreman, the committee chairman, from another committee or department, or from the purchasing agent himself. The requi-

Form 4-31
QUOTATION SUMMARY—DEPARTMENT DATE 193
No. AND DESCRIPTION
SPECIFICATION PRICES WANTED

NAME	ADDRESS	Price	Discount	Days	Del'd	Terms	Rank

ORDERED FROM P. O. No. DATE 193
REASON
LIST PRICE

FORM 4 (11 x 8½ inches)

DEPT. OF _____

VILLAGE of SOUTH ORANGE, N. J.

ORIGINAL PURCHASE ORDER

TO

PURCHASE ORDER
№ 208
THIS NUMBER MUST APPEAR ON ALL BILLS AND PACKAGES

DATE _____ 193__
WANTED _____
QUOTED _____
REQ. No. _____

FOLD

SHIPPING INSTRUCTIONS

Our Messenger	Parcel Post	TO DEPT OF _____
Your Messenger	Air Mail	
Our Delivery	Express	
Your Delivery	D. L. & W. R. R.	
F. O. B.	Freight	

CONDITIONS

Mail acceptance of this order immediately.
On date of shipment, mail INVOICE IN DUPLICATE showing our Order No. Shipping Route, Car No. and Initials, number of packages, gross weight and attach Bill of Lading with freight rate inserted. Shipping instructions MUST be followed. If not, extra cost will be charged to you.
If you cannot fill this order at once, complete, please notify us, specifying when and what portion of the order you can ship.
Payments will be figured from date of receipt of material or complete shipping papers.
All materials furnished will be subject to inspection and test, and if rejected, will be held subject to order of shipper. Unless otherwise agreed, the Specifications of the American Society for Testing Materials will govern.
No charges will be allowed for boxing or cartage or packing.
This order is not valid unless acknowledgment slip attached is SIGNED, DATE INSERTED and PROMPTLY returned.
We reserve the right to cancel unless shipment is made at the time promised.
This order must not be filled at higher prices than last quoted or charged without advice and approval. If price is omitted on order, it is agreed that your price will be the lowest prevailing market price.
Goods subject to our inspection and rejection, notwithstanding prior payment. It is agreed that the goods ordered shall comply with all Federal and State laws relative thereto, and that you will save harmless and defend the Village from loss, cost or damage by reason of actual or alleged infringements of letters patent concerning same.
Drafts will not be honored.
Unless otherwise stated all goods are bought F. O. B. here.
If the terms and conditions attached hereto do not meet with your approval advise us promptly before making shipment. Shipment without such advice will be considered an acceptance of them.
This order cannot be substituted without our approval. We will not accept substitutions.

PLEASE FURNISH THE FOLLOWING AS PER CONDITIONS ABOVE

TERMS _____ DEPT OF _____

Approved _____ PER _____

TITLE _____ TITLE _____

(TEAR THIS OFF AND MAIL TO)

DEPT. OF _____
VILLAGE of SOUTH ORANGE, N. J.

ORDER № 208

GENTLEMEN:
WE ARE IN RECEIPT OF YOUR ORDER, WHICH WE WILL SHIP ON OR BEFORE _____ 193__ WE ACCEPT THE CONDITIONS NAMED THEREON

SIGNED

FORM 5 (9¾ x 13 inches)

sition goes to the purchasing agent, the duplicate is retained by the requestor. Again the decision as to actual purchase rests with either the purchasing agent or the chairman, or in an emergency, with either the foreman or the workman in charge.

Form No. 3

This is a request for a quotation, which comes into use after No. 2 is O.K.'d and the nature of the purchase is such that estimates are required.

Form No. 4

A summary of quotations is given here and is submitted to the chairman for decision as to where purchase is to be made.

Form No. 5

Next comes the purchase order, which follows as nearly as possible the standard form approved by the National Association of Purchasing Agents. The original goes to the vendor; the duplicate stays with the purchasing agent and is filed alphabetically; the triplicate is filed numerically.

Form No. 6

This is the receiving ticket, which is made out when the material, equipment or service is received. The original is attached to the vendor's bill, the duplicate stays with the purchasing agent, for an alphabetical file, and the triplicate for a numerical file. If a duplicate bill is sent, it cannot be passed if the original receiving ticket is out of the file for receiving tickets awaiting bills. If a bill has not been received, its presence there so indicates. It is handy for rendering department bills for work done or charges against other departments or citizens.

Form No. 7

Last is the charge ticket, to make a charge against the person or department receiving material. The original goes to the receiver, the duplicate to the person who is to make the charge, and the triplicate stays with the clerk.

Operating the System

So far these forms have covered every activity that has come up. They are helping to account accurately for material, for getting competitive prices, for giving written and complete instructions to vendors, for prompt checking of bills, and for proper charging after work is performed or material issued.

In checking bills, the committee chairman has all information before him. In connection with this, two rubber stamps are used on the bills: one of these has lines to

Form 6-30 **RECEIVING TICKET** 114

Department of _____

VILLAGE OF SOUTH ORANGE, N. J. Date _____ 193__

Received From _____

Marks _____ No. Packages _____

Cartage _____ Expressage _____ Freight _____

Checked by _____ Carrier _____

Received by _____ Dep't. Per _____

QUANTITY	ARTICLES	WEIGHT

ORIGINAL

Purchase Order No. _____ Date of Invoice _____ 193__

109913

FORM 6 (5¾ x 4 inches)

Form 7-30 Charge No. 320 Date _____ 193__

To _____

Address _____

The Following:

NO.	DESCRIPTION	COST

RECEIVING COPY

Received by _____

For _____

Credit _____ Dep't.

Entered by _____ on _____ 193__

109912

FORM 7 (5¾ x 4 inches)

show that the prices and extensions have been checked, that they are entered on the order, that the receiving ticket is No. ———; the other shows whether the cost is a budget or a special appropriation item, how it is to be charged, etc.

The clerk who operates the purchasing system also issues all material, types department correspondence, handles all telephone messages, directs men on order from the foreman, keeps weather and charge records, etc. About two hours a day are required to care for work incidental to buying.

This description cannot cover all points, but the writer will be glad to correspond with persons interested and to send copies of the forms used.

Advance Planning of Public Construction Receives Federal Government Approval

Will States and Municipalities Help to Forestall Another Business Depression by Similar Action?

THE signing by President Hoover, on February 10, of the Wagner bill (S. 5776) has put the final stamp of approval by the Federal Government on a principle long advocated by economists and political scientists. The new law, which may now be cited as the "Employment Stabilization Act of 1931," provides by its title "for the advance planning and regulated construction of public works, for the stabilization of industry, and for aiding in the prevention of unemployment during periods of business depression."

The act establishes a board to be known as the Federal Employment Stabilization Board, and to be composed of the Secretary of the Treasury, the Secretary of Commerce, the Secretary of Agriculture, and the Secretary of Labor. The duty of the board is "to advise the President from time to time of the trend of employment and business activity and of the existence or approach of periods of business depression and unemployment in the United States or in any substantial portion thereof; to cooperate with the construction agencies in formulating methods of advance planning; to make progress reports; and to perform the other functions assigned to it by this Act."

The principal duties of the Federal Employment Stabilization Board are covered by Sections 5-8 of the Act, which follow in full text:

PUBLIC WORKS EMERGENCY APPROPRIATION

SEC. 5. Whenever, upon recommendation of the board, the President finds that there exists, or that within the six months next following there is likely to exist, in the United States or any substantial portion thereof, a period of business depression and unemploymen, he is requested to transmit to the Congress by special message, at such time and from time to time thereafter, such supplemental estimates as he deems advisable for emergency appropriations, to be expended during such period upon authorized construction in order to aid in preventing unemployment and permit the Government to avail itself of the opportunity for speedy, efficient, and economical construction during any such period. Except as provided in this Act, such supplemental estimates shall conform to the provisions of the Budget and Accounting Act, 1921.

WORKS ON WHICH APPROPRIATIONS USED

SEC. 6. Such emergency appropriations are authorized and shall be expended only—

(a) For carrying out the provisions of the Federal Highway Act, as now or hereafter amended and supplemented;

(b) For the preservation and maintenance of existing river and harbor works, and for the prosecution of such projects heretofore and hereafter authorized as may be most desirable in the interest of commerce and navigation;

(c) For prosecuting flood-control projects heretofore or hereafter authorized; and

(d) For carrying into effect the provisions of the Public Buildings Act, approved May 25, 1926, as now or hereafter amended and supplemented, in respect of public buildings within and without the District of Columbia.

(e) For prosecuting such other construction as may now or hereafter be authorized by the Congress, and which is or may be included in the six-year advance plans, as hereinafter provided.

ACCELERATION OF EMERGENCY CONSTRUCTION

SEC. 7. For the purpose of aiding in the preventing of unemployment during periods of business depression and of permitting the Government to avail itself of opportunity for speedy, efficient, and economical construction during such periods the President may direct the construction agencies to accelerate during such periods, to such extent as is deemed practicable, the prosecution of all authorized construction within their control.

ADVANCE PLANNING

SEC. 8. (a) It is hereby declared to be the policy of Congress to arrange the construction of public works so far as practicable in such manner as will assist in the stabilization of industry and employment through the proper timing of such construction, and that to further this object there shall be advance planning, including preparation of detailed construction plans, of public works by the construction agencies and the board.

(b) Each head of a department or independent establishment having jurisdiction over one or more construction agencies shall direct each such construction agency to prepare a six-year advance plan with estimates showing projects allotted to each year. Such estimates shall show separately the estimated cost of land, the estimated cost of new construction, and the estimated annual cost of operation and of repairs and alterations.

(c) Each construction agency shall also prepare a program for prompt commencement and carrying out of an expanded program at any time. This program shall include organization plans. It shall also include the plans for the acquisition of sites and the preparation of advance detailed construction plans for not less than one year in advance, except where in the judgment of the board this would not be practicable.

(d) Such programs, plans, and estimates for the six-year period shall be submitted to the board and to the Director of the Bureau of the Budget. The Director of the Bureau of the Budget shall report to the President from time to time consolidated plans and estimates.

(e) Each construction agency shall keep its six-year plan up-to-date by an annual revision of the plans and estimates for the unexpired years and by annually extending the plan and estimates for an additional year.

(f) The President is requested each year, before recommending the amount of construction appropriations for the next fiscal year to take into consideration the volume of construction in the United States, the state of employment, and the activity of general business.

(g) The board shall collect information concerning advance construction plans and estimates by States, municipalities, and other public and private agencies which may indicate the probable volume of construction within the United States or which may aid the construction agencies in formulating their advance plans.

Preparedness Against Future Unemployment

Commenting on the new Act, its main sponsor, Senator Robert F. Wagner, of New York, as quoted in the *United States Daily* of February 11, said:

"We have long talked about public works as a means of providing employment during period of depression but we have never had the machinery to enable us to expand public construction in sufficient volume and in time to be effective. The element of time is particularly important. The public construction project must be released at the crucial moment before unemployment has become very general.

"The new act provides the two elements to make public construction most useful as a stabilizer of employment. The first is the planning commission, whose function and responsibility it will be to watch the trend of business and to give the signal when public construction must be increased. The second is the provision for advance planning which will establish a reserve of plans for public works so that no time need be lost in their preparation.

"Similar legislation is a fundamental necessity of every state and municipal government. The intelligent administration of this act and of similar acts in the several states will contribute mightily to the stabilization of business and the steadiness of employment. . . .

"After almost three years of persistent effort, of hearings, investigations and debates, I am happy that this bill has become a law. It will increase a hundredfold our preparedness against unemployment."

Traffic-bound Roads as a Problem for County Engineers

By **H. G. SOURS**
County Engineer, Summit County, Akron, Ohio

THE popular conception of a highway program has generally been that it comprises the building of a series of main thoroughfares supplemented with a few local roads improved with a secondary type of construction. The secondary system until recently was considered a minor problem, and as a result very little advance was made in methods of building such roads, and maintenance was generally neglected. Within the last few years, however, the importance of opening up territory with all-weather roads which would permit more people to get to and use the main highways, combined with the fact that it was out of the question financially to improve such roads with a higher-priced construction, has brought about the study of what has developed into a problem of great importance to the entire country.

In thickly populated sections where traffic is heavy, the problem of hard-surfaced pavements and the widening and reconstruction of thoroughfares is the major problem. In the rural sections, however, and in those states where the people are confronted with the farm-to-market road problem, the building of secondary roads and the proper distribution of funds is the problem at hand. Relatively, the proportion of completed hard-surfaced roads is very small, although traffic demands have necessitated the concentration of a high percentage of the total available funds on their improvement. As a result, to provide highways suitable to limited traffic requirements for the mileage involved often resolves itself into a problem of economics.

Roadbed and Riding Surface Are All Important

In planning the low-cost road, matters of correct alignment and grade, while important, are secondary to the need for proper roadbed and riding surface. Nor is the quality of the finished road assured with the provision of a suitable surface material. The type of maintenance will determine whether or not the road is a success or a failure, and here the engineer has ample opportunity to show his skill and especially his judgment.

Such natural materials as gravel, stone, slag, etc., properly graded as to size, lend themselves most admirably as surface metal. Under increasing traffic conditions, however, the wasting-away of the fines becomes not only a dust nuisance, but a considerable item of material loss, necessitating continuous and relatively costly replacement.

The loss of surface material has been calculated under various conditions, and some authorities place it at from ½-inch to 1 inch per season for a road carrying from 400 to 600 vehicles per day. The Indiana State Highway Department estimates the loss of 0.289-cubic yard per vehicle-mile, which is relatively conservative compared with other computations.

It may be readily seen that a surface treatment that would conserve the surface material would have a considerable value from this standpoint alone. The Summit County (Ohio) Maintenance Department has used calcium chloride quite extensively in helping to solve this problem.

Calcium Chloride as a Binder

Calcium chloride was first tried out as an experiment in an attempt to meet the objections of the people living in a small village through which traffic-bound roads had been built and where the dust had become almost unbearable. The results were satisfactory and at the present time the demands for relief from dust have spread over practically the entire traffic-bound mileage.

It was found that not only did this method eliminate the dust complaint, which was incidentally a considerable hazard in reducing visibility on the highway, but in a large part the cost of the treatment was offset by the saving in surface material, which had been formerly blown away as dust.

Calcium chloride, on account of its ability to absorb moisture from the atmosphere, serves to keep the road surface damp and compacted. This is a very special advantage in dry periods, as it makes it possible to blade the roads without breaking up the surface structure, which generally occurs in attempts to smooth off the dried-out surface metal.

The amount of calcium chloride used in a season varies somewhat with the traffic and weather conditions, but an average might be fixed at 2½ pounds per square yard in two, and in a few cases, three applications. It is best applied by the use of a lime drill pulled behind a truck, and best results have been attained by making the application either before or after a light rain.

The metal of the road should be carefully shaped during the spring season by blading and dragging. Only a small amount of loose material should remain on the surface before applying the calcium chloride, as an excessive amount of floating material will tend to cause some dust, since most of the moisture is retained in the compacted surface. At such times as the surface tends to become rough a very thin layer of loose material, containing a good portion of fines, bladed from the side of the road and spread over the surface, will smooth it up.

The question has been raised as to damage to fenders and tires caused by possible action of the salt. This objection has never asserted itself in any of our own experience. Usually the chloride is completely dissolved and absorbed in 24 to 36 hours, after which none of it can be picked up by passing cars.

Chloride Is Not a Cure-All

The use of calcium chloride is not a universal remedy in the maintenance of unpaved roads, and is not recommended under all conditions. But within such traffic limits as deny the expenditure of funds necessary for more permanent improvement, its use is undoubtedly most desirable on account of the simplicity of its application, low relative cost and general effectiveness in making possible a good riding surface.

Further Development of Low-Cost Roads

On traffic-bound roads which have been built a sufficient length of time to have developed a satisfactory base, treating with bituminous materials forms the basis for a further step in providing low-cost roads of higher traffic requirements. Such treatment may vary from light treatments to heavier mixed-in-place types, and if properly constructed on a durable base, they form an excellent riding surface. With subsequent treatments from time to time as required, the surface will increase in durability.

Many engineers, yielding to the demands to improve the surface of a road, have made the mistake of putting on a bituminous treatment before the traffic-bound base is in proper condition to support it. As a result, what would otherwise have afforded a good top surface has broken through, resulting in a considerable loss of investment and an embarrassing experience. The average user of the road blames the material for the failure, and in his judgment questions the further use of it in that class of work. Not being familiar with the real reason for such failure, his impression is not a correct one, and for this reason the engineer is confronted with problems which are difficult to explain.

It is of interest that calcium chloride treatment has been successfully demonstrated as being very helpful and expediting the attainment of the proper consistency or permanency of road surface, which is one of the important factors preliminary to a bituminous treatment if the result of such treatment is to give the satisfaction and service expected of it.

In conclusion, it has become a known fact that the improvement of secondary roads has opened up a vast and interesting field and that the problem of proper maintenance and treatment of such roads is the most important part of such a program.

Finding and Using the Funds to Make City Planning Effective—III

By COLEMAN WOODBURY
Research Associate in the Institute for Economic Research, and Assistant Professor of Economics at Northwestern University

AFTER a plea for genuine economy in city plan expenditures and some discussion on the debt policy of municipalities, this section of the discussion is concerned with what has been called America's contribution to the practice of local government—the long-term financial program. In barest outline the preparation of such a program consists of three steps: (1) deciding on the necessary improvements and the order in which they should be undertaken; (2) estimating the probable cost of the various projects at the time for which they are scheduled; and (3) estimating all possible means of financing the improvements desired with due regard to present debt conditions, sources of revenue, and the legal and practical limitations on funds available. A cut-and-fit method of coordinating the last two steps is required in almost all cases.

1—Determining Order of Urgency

The order of urgency of the various projects is to a considerable extent determined by local conditions. Some cities have an accumulation of park or street system problems piled up by years of inaction which demand strenuous efforts at once. Others have inherited less of a burden and can spread out their future efforts over a greater period of years. Two or three general statements, however, can be made concerning this first step. In deciding on the order of improvements, the planning commission is exercising a semi-judicial function. It should attempt to see the gains and losses of each improvement to different sections and groups in the city and *not* to proceed in the naive faith that every city plan improvement will benefit every citizen in equal degree. Furthermore, it should not allow its decision to be directed by the publicity and pressure of small but very vocal groups. These statements are of course easy to make, but rather difficult to follow.

In the second place, the plan commission should not only note the costliness, the waste, and the discomfort to be alleviated by various items in the plan, but should consider the probable expense of carrying out the various projects in the future. This will be particularly decisive in improvements involving large purchases of land. For example, two parks or playground areas are badly needed in different sections of the city. The present need is nearly the same in one as in the other. But one is a district which is turning rapidly to apartment use, and land values are mounting; the other district has stabilized or declining land values at a slightly lower level. In such a case the land should be acquired as soon as possible in the first section. In order to make these decisions, the commission, particularly in a good-sized city, should not rely on the observations and impressions of its members; it should keep maps of building development and records of transfers.

If the city is part of a metropolitan region, its plan commission should heed the suggestions and advice of a competent regional planning body and not rush ahead with some improvement program which does not coordinate with those of neighboring towns.

2—Estimating Costs

The second step is estimating the total construction cost, with proper allowance for the trend of land values and of material and labor prices. Condemnation costs and probable property damages should not be overlooked. To be of use in framing such a program, the estimates should include, for major improvements extending over more

than one fiscal year, an estimate of *expenses to be met in each year.* The probable operating and maintenance expenses of the improvement for the years after it goes into use should also be included.

3—Possible Sources of Revenue

The third step brings up many of the questions which have been partially discussed. All other steps in the estimating of revenues, however, should be preceded by a *survey of the present financial condition of the city, which should be quite as detailed as any used map made for planning purposes.* The present assessment system, legal limits on the tax rate, on debts (not overlooking the New York "seven per cent law") and on special assessments, outstanding debts, the amount and reliability of departmental revenues, periods of maturity of bonds, present investments by the sinking-fund, and the record of past tax rates, should all be clearly understood. Without this individual survey, estimates of the future based on the general experience of cities may well prove worthless.

Future receipts from taxes and future operating costs of governmental functions are based on population estimates. Government expenses, exclusive of debt charges, and total assessed valuations are usually calculated as increasing in direct ratio with population. For extreme variations this is not entirely accurate, but for a five- to ten-year period for cities under 300,000 it is approximately true. Debt charges can be accurately figured. Assuming a continuance of the present tax rate or some desirable modification of it, and estimating public utility and department revenues from past performance, the year-to-year receipts are estimated. A margin of current receipts over governmental expenses is thus shown, which may be supplemented by special assessments and use of the city's credit.

Each of these estimates should be itemized by years and compared not only for the period of the program, *but year by year* with the estimated costs. In bringing about the necessary coordination, changes may have to be made on both sides, and a comfortable margin of income over expense should be maintained. Public hearings are a valuable step in this work of coordination.

Some persons speak of long-term budgets, but this implies a finality and a definiteness which is usually illusory. *The program should be revised annually or every two years at least.* Some questions arise as to how long a period should be covered. Five to ten years has been the most common length of the programs already drawn. White Plains, N. Y., includes in the city plan report of 1928 a 48-year program, but of course the figures for the later years are only approximations. Calculations for a long period, however, do show whether the debt policy followed will tie up more and more of the bonding power or will free credit for unforeseen purposes which may arise.

Discouraging Real Estate Speculation

Some arguments have been raised against long-term programs on the grounds that they will encourage speculation in real estate. This effect is possible, inasmuch as the mere drawing of such a program calls attention to the problems and possibilites of urban real estate development. Definiteness and full publicity as far as possible as to the *nature and the time* of the proposed improvements should, however, act against the speculative mania which thrives on uncertainty, "inside" rumors, secret information, etc. Uncertainty as to the effect of certain improvements on surrounding land will of course remain; uncertainty as to *what improvements* are to be carried through and *when* they are to be undertaken should be lessened by the long-term program.

To Abolish Washington's Alley Slums

A BILL now before Congress looks to the complete abolishment from Washington and the District of Columbia of alley dwellings. This proposed measure has been prepared by the National Capital Park and Planning Commission, which has housing betterment as one of its major responsibilities, and which has become convinced after long and careful study that the only method of dealing with these breeding centers of evil is to wipe them out completely.

"The root cause of their iniquity," says the Commission, "is that they constitute a series of little hidden communities in which anti-social activities flourish. It makes little difference whether they breed disease, vice, and crime, or whether the diseased, the vicious, and the criminal find in them a congenial refuge . . . the result is the same."

The bill looks to some future use of the present alley residence property and to the rehousing of the alley dwellers. It recognizes that simply to leave the dwelling vacant invites new troubles. Moreover, the squares containing inhabited alleys are, as at present designed, only partially useful for present-day needs. By replatting them, they can be converted from liabilities to assets of great value, it is believed.

A few of these inhabited alleys, it is shown, may be converted into minor streets, while others, by adding to them adjacent property, may be converted into school playgrounds, public playgrounds, or neighborhood parks. Others will be needed for extensions to public buildings and for other public uses. Still others lend themselves to socially and economically desirable private uses if the small parcels now scattered among many owners can be assembled, replatted and sold. Among these uses are residential places, automobile parking spaces, garages, and repair shops.

The period granted for conversion is ten years. The method proposed by the bill is to authorize the United States Housing Corporation to acquire the necessary property in squares containing inhabited alleys, by purchase, condemnation, or gift; replat it and sell it. Within ten years the work would be completed. For this purpose the bill provides that the United States Housing Corporation shall utilize $500,000 of the amount now standing to its credit in the Federal Treasury, and that after the first year Congress shall loan $500,000 annually or so much thereof as shall be needed, at four per cent per annum in the form of a revolving fund.

After the bill was drafted, the Housing Committee of the Washington Council of Social Agencies investigated vacant street houses that would be available to present alley dwellers. The result was to show conclusively that while alley houses begin at a lower rental and streets of the same general character go to a higher rental, there is an overlap which includes the majority of both street and alley houses invesigated.

The Committee is cooperating actively with the National Capital Park and Planning Commission for the passage of the bill.

The Municipal Power Plant and Water Works in a Town of 3,500

By BENNETT B. SMITH

NEARLY thirty-five years ago Cameron, Mo., a town now of 3,500 people, began its first municipally owned light plant. A privately owned plant which had been in operation for a short time before this was purchased. The plant when erected by the city was placed near the business section and was operated by steam. It continued in operation with many changes and repairs until 1924.

Power-Plant Equipment

A new plant was built in 1924 and began operation on October 5 of that year. The Board of Public Works under which the city was operating at that time made many trips and spent much time investigating different style plants before a final decision was reached. They chose direct-connected, oil-operated engines for the new plant. Three Fairbanks-Morse engines, type Y, were installed. Two were of 300-hp., 200-kw., and one was 200-hp., 135-kw. Two years ago the 130-kw. engine was removed and a new style 700-hp., 465-kw. was put in at a cost of $43,000. This comprises the present equipment, the two other original engines being still in operation but not in constant use.

These engines have been very satisfactory. The fuel-oil cost at the plant for operation has averaged about 4 cents per gallon. Taking this cost with the addition of all other expense of salaries, repairs, etc., current is placed on the board at an average of about 0.86 cents per kilowatt-hour. The plant is producing on an average of 140,000 kwh. per month. So satisfactory has the plant been and so carefully has it been maintained, that during the six years it has been in operation it has been shut down a total of only one hour and fifty-five minutes. Sections of the city have been out at times owing to line trouble, but stops at the plant have been few and short. Repairs for the seven years have amounted to a total of $275.

The Board and the city in general are well pleased with the results obtained. Light and power rates have been reduced from those of the old steam plant, when the high price of coal, the salaries of the several employees and other expense was resulting in a production cost of about 4 cents per kwh. at the switchboard. Then, too, stops were frequent and the plant might be shut down for hours at a time.

The new plant is in charge of an expert in this type of equipment, all minor details are looked after, and it is kept up-to-date. At present the cooling system is of the old style, outside type, but plans are under way to change this to the more modern indoor style during the summer months. Silencers have just been added at a cost of nearly $2,000.

Light and Power Rates

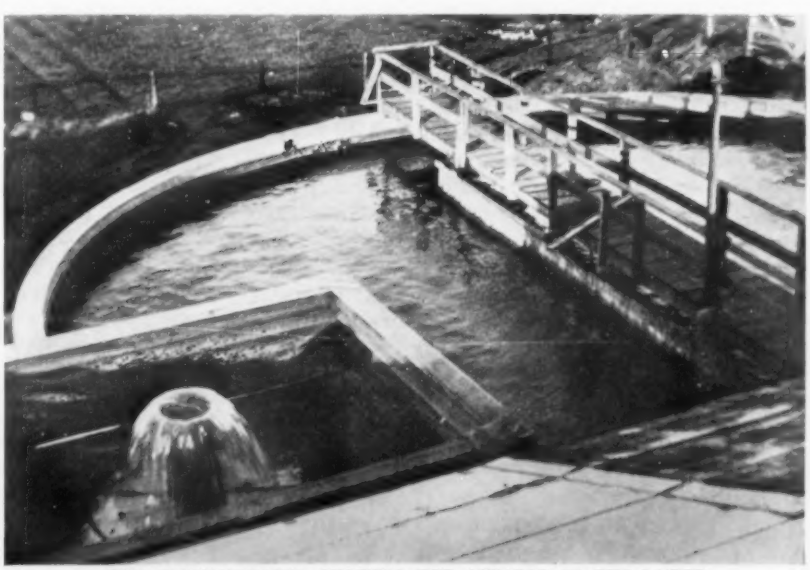
Light rates are cheaper than those of any town of the surrounding territory. Eight cents per kwh. for the first 50 is charged, and over that the rate is 7 cents. The minimum is $1. Power rates are 5 cents per kwh. for the first 300 kwh., and for the next 5,000, 3¼ cents. Over 5,300 kwh., 2½ cents is charged. Cooking and refrigeration service is 4 cents per kwh., with a minimum of $1 per month.

The Electric and Water Plant Buildings

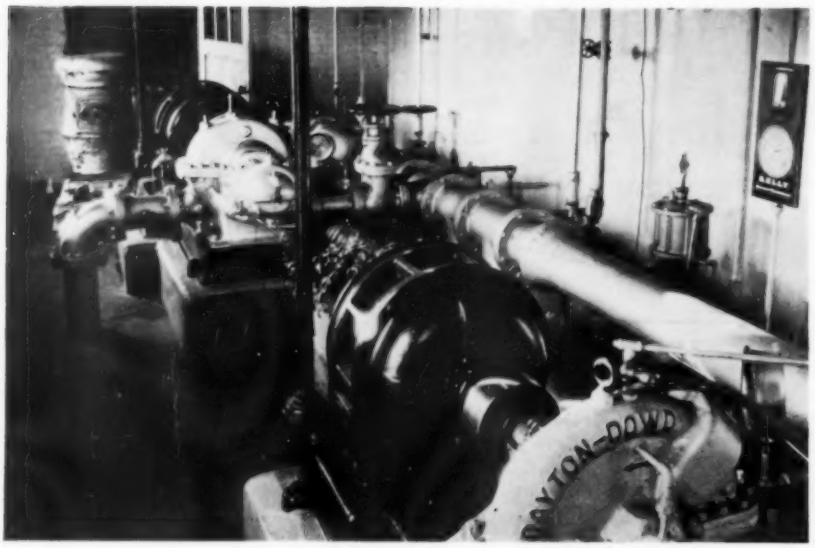
The building proper, while simple in architecture, is neat and presents a pleasing appearance. It is 50 x 85 feet and is built of red pressed brick with a roof of concrete slabs. Ample room is provided for the machinery now installed, with space for any additions in equipment which may be desired. The surrounding ground has been sown to blue grass, and shrubbery has been planted around the building. A circular drive leads in and out of the yard, and a covered parking space is provided between the building and the filter plant adjoining for employees' cars. The interior is kept absolutely clean and the machinery and floor are kept properly painted.

The Water Works

The water-works system was established in 1904, when not many towns of the same size had taken such a step. A large plat of ground three miles from town was purchased on which to construct the reservoir. Drainage covered a large area, with the result that there has never been



THE SETTLING-BASIN, SHOWING THE AERATOR IN THE LOWER LEFT-HAND CORNER



THE TWO PUMPS FOR THE WATER WORKS
Below the pumps is the clear well. These are on the first floor of the water-works building

a scarcity of water until the past year, when some concern was felt on account of little rainfall. The water system was used only for fire protection and lawn and garden watering. Installation came as a direct result of a disastrous fire which destroyed half a block of business houses a short time before.

Filter Plant Added

In 1919 a filter plant was added, a crude affair, but one which worked more or less satisfactorily. Alum and lime were mixed in large tubs and allowed to drip into the mixing chamber, the water from which then went to the coagulating basin. There was no chlorinator, of course, and no chemical test. The plant was in charge of a man whose salary was very small. He was inexperienced and did the work mechanically only as he was shown. But a local laundry found it was having difficulty in using the water for washing, and an investigation was started. It was found that too much alum was being used, and the water was too acid. The phenolphtalein test was then added.

Four years ago a chemical laboratory with a man in charge was established which gave a closer and more satisfactory check of the water and eliminated the necessity of sending samples of water to the State Board of Health for examination. At that time there were no other towns in the state of the same size operating such a laboratory. The beginning was meager. The man in charge was sent to Kansas City and remained several days learning the methods used there. On his return a chemical room was set up with a few supplies and instruments. Since then the laboratory has grown until it is not only testing the city water supply but is serving the surrounding community in testing water from wells. This is done without charge except outside the city limits, when a charge of 50 cents is made.

Recent Additions to the Plant

Recently a new Foote Brothers type 12W mechanical mixing chamber has been added at a cost of $700. This has reduced the cost of chemical to about one-fourth of the old, locally constructed mixer. Much more satisfactory results are also obtained with the water.

A homemade aerator is being used with good results. It is constructed along the line of the commercial type, except that heavy wire netting is used instead of pans. Thus, as the water falls over the netting it is well broken up.

There are three filters now with a capacity of 250 gallons per minute each. These are constructed of five sizes of rock varying from 3 to 4 inches to one-twelfth of an inch. Thirty inches of sand covers this, making a total filter bed thickness of 55 inches.

A clear well from which water is pumped into the mains has a capacity of 60,000 gallons. Water goes to this well after passing through the areator, the settling basin, and the filter beds. A Wallace & Tiernan chlorinator is used, with an older type from this same firm as a standby. About nine pounds of chlorine to four million gallons of water is used.

Two Dayton-Dowd single-stage, 500-gallon capacity pumps are located at the lake and are operated by remote control from the filter plant a mile away.

The pumps at the filter plant to force water to the tower are one Dayton-Dowd single stage, and a Worthington two-stage, each with a capacity of 500 gallons per minute. At present an average of 125,000 gallons is being pumped per day, while the capacity of the plant is a million gallons.

The filter plant is located in an ample brick building adjoining the newly constructed light plant.

All changes and additions in the water plant operation must be made with the permission and under the supervision of the State Board of Health. It is rated by this Board as a grade A plant, the highest rating.

TO EMPHASIZE THE CITIZENS' DUTIES IN OUTDOOR CLEANLINESS

THE Committee of Twenty on Street and Outdoor Cleanliness, which was organized some time ago by the New York Academy of Medicine to promote clean conditions of the streets and other open places of the metropolis, has announced an old-fashioned "Town Meeting" to be held at Town Hall on the evening of April 20.

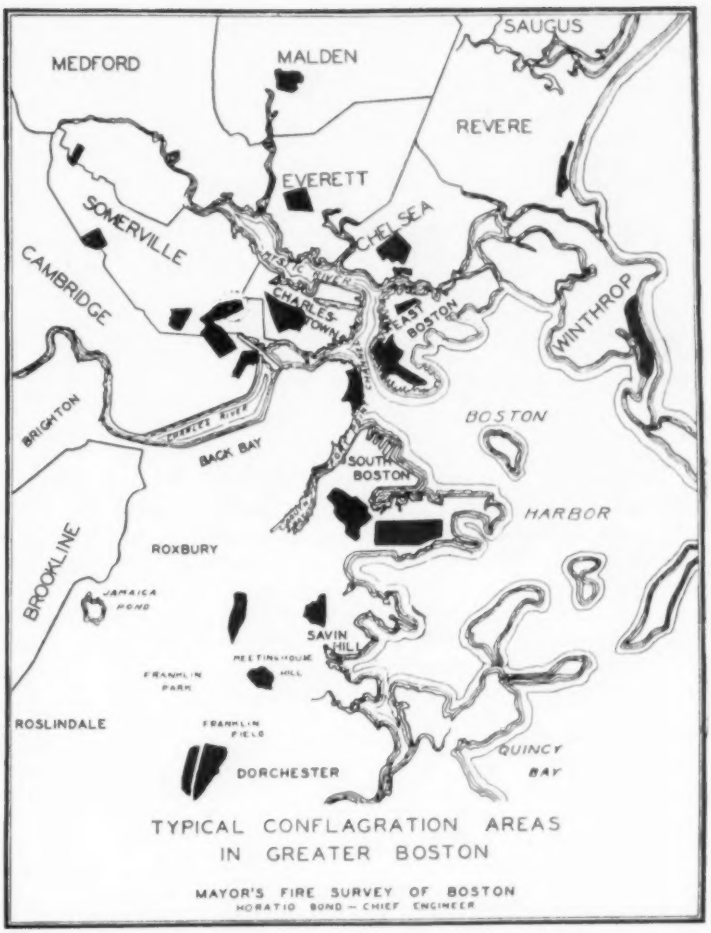
This meeting is to be arranged by the Committee of Twenty in association with the Outdoor Cleanliness Association and with the cooperation of the Park Association, the Fifth Avenue Association, the Merchants' Association and many other important civic bodies. The chief purpose of the meeting will be to arouse the public conscience to a realization of the citizens' duties in this matter of street and outdoor cleanliness. President Nicholas Murray Butler will be chairman of the meeting and it is expected that there will be a number of other very prominent speakers.

At the meeting of the Kips Bay Neighborhood Association, of New York's upper East Side, held Thursday afternoon, February 19, Dr. Bernard Sachs, Chairman of the Committee of Twenty, spoke on "Spotless Town" and on the importance of the Kips Bay Demonstration, to be inaugurated April 1.

Fire Department Mutual Aid

Inter-City Cooperation in Fire Fighting Needs Careful Planning and a Minimum of Red Tape

By **H. S. WALKER**
Engineer,
National Fire Protection Association



TYPICAL CONFLAGRATION AREAS IN GREATER BOSTON

MAYOR'S FIRE SURVEY OF BOSTON
HORATIO BOND — CHIEF ENGINEER

ONE of the most interesting phases in the development of fire department administration in the past few years has been the adoption and extension of plans for mutual aid. Some of these plans have been simple, involving perhaps an agreement between two adjacent towns. Others have been more complex, calling for inter-municipal response embracing a considerable area and providing for the covering of vacated territories.

What is meant and implied by the term "mutual aid"? It has been defined as the application of the Golden Rule to the fire service, but it implies more than a willingness on the part of a given community to help its neighbor in distress. It means a definite and prearranged agreement and plan whereby regular response is provided for in event of alarms from certain boxes or locations—a plan that is practically automatic in its operation and makes possible complete and definite cooperation between the fire departments of the communities entering into the agreement.

The Mutual Advantages

What are the advantages of such a plan? They seem obvious. To the city chief, a plan of this sort enables him to know just what reinforcements he can count on in event of a serious conflagration. Furthermore, by having "outside" companies cover certain vacated stations he can rest assured that a fair measure of protection will be afforded the city while his department is engaged. This, it may be said, might be and has been done without a mutual aid plan. True, but consider the advantage of a prearranged plan whereby it is known definitely and in advance what companies will be at a fire or covering-in. If proper arrangements have been made, such response will be automatic and—what is better—positive.

The same advantage is present in the case of the smaller community. Under a mutual aid plan a chief having a department limited in man-power and equipment may feel assured that in event of an emergency, outside assistance is at once available. There is no need to waste valuable time verifying credentials or trying to reach proper authorities, and no question as to whom to call or what to send. The red tape has been worked out beforehand and eliminated.

These advantages refer to conflagrations or multiple-alarm fires. How about response to "line" boxes, and assistance in event of more than one fire? Line boxes should be answered by both communities, and the first company to arrive should go into action as though no imaginary boundary line existed. Cleaning up after the fire, however, should be done by the department in whose territory the fire occurs and the "outside" company should be relieved as soon as practicable. Authority at such a fire naturally is vested in the chief in whose territory the fire is located.

In the event of more than one fire in towns where the number of companies is limited, the operation of a mutual aid system is a distinct blessing and may easily be the means of preventing a serious loss of life or property at some time. One life saved or a single large fire averted would more than offset the effort made in establishing a mutual community agreement.

In this matter of response to line boxes, let me cite briefly the experience of two Massachusetts communities—Lynn, a city of 100,000, and Swampscott, an adjoining town of 10,000. A mutual aid agreement was made between these two communities in November, 1893, and has existed with no difficulty arising from that day to this, and I believe that both communities feel that they have bene-

fited from it. This seems to be borne out by an item appearing not long ago in a Lynn paper which read in part as follows:

"A dwelling-house fire on Ocean Street, near Kimball Road, the other afternoon, demonstrated the efficiency of the mutual aid plan by which Swampscott apparatus from the New Ocean Street headquarters rolls into Lynn nearby boxes. Chief Warnock and his Swampscott units were the 'first in' at the fire and raised the first ladders, and their chemical and water lines were laid quickly. The Swampscott firemen did a full share of the work of saving the roof from being burned off the fine dwelling-house which was threatened.

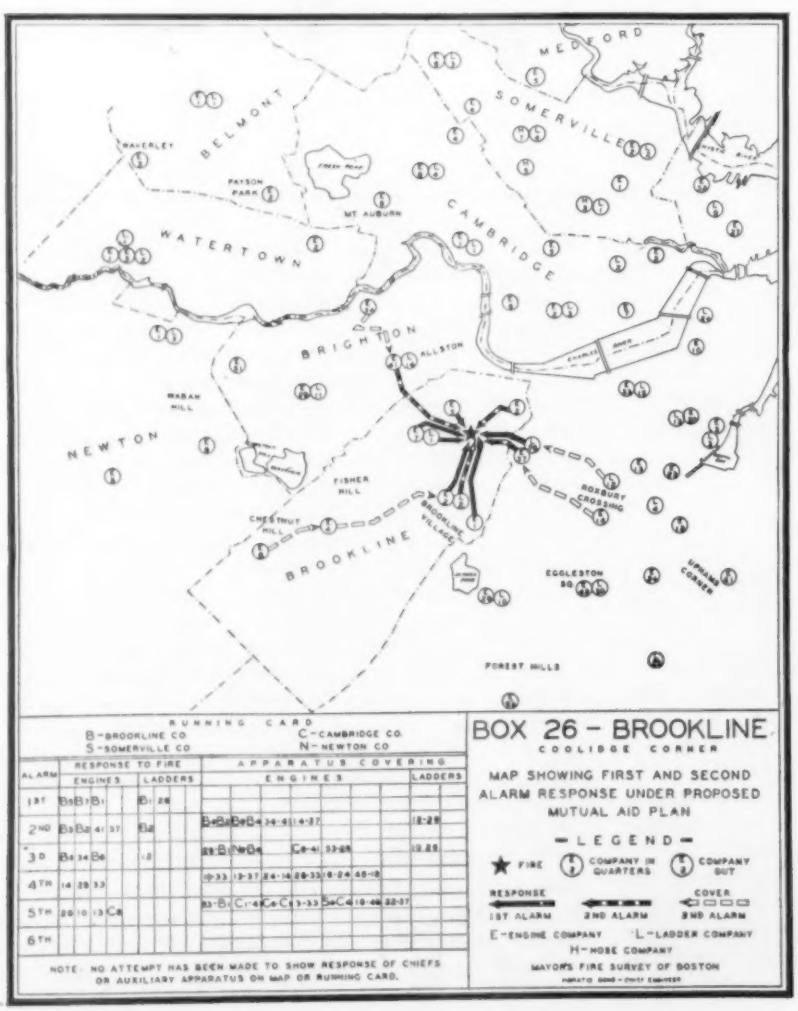
"There are occasions, too, when Lynn units are 'first in' on certain Swampscott box alarms, and hence the mutual aid plan distributes the glory on both sides of the boundary. Incidentally, Swampscott's Department in addition to rolling in with dependable apparatus brings always a man-power that is efficient. The plan is decidedly neighborly."

The Aid Must Be *Mutual*

The question is sometimes asked as to what communities should go in for mutual aid. Is it applicable to all communities or is it limited to certain types and conditions? All communities that are in a position to assist one another *mutually* (for there must be fairly equitable give-and-take on both sides) may well profit by the establishment of mutual aid systems. No small community has the right to expect unlimited service from its larger neighbor unless it can offer something in return, and no large community should expect its smaller neighbor to give assistance if it means leaving valuable property without protection. This latter condition may often be guarded against by including a group of cities and towns in a single mutual aid system and so arranging the running card as to adequately cover all vacated territory. Where a large city is expected to cover inadequately protected adjacent territory, such service should be paid for.

In the fire-waste survey of Boston made by our association, a very considerable study was made of the mutual aid systems in the metropolitan area. This was done because a study of the fire records of some of these communities disclosed that the bad records have usually been due to serious large fires in which outside aid was required by the local fire departments. Moreover, there are several areas in and around Boston that offer serious conflagration possibilities. Large concentrations of fire apparatus would be needed at such points in event of serious fires, and considerable areas would be left unprotected at such times unless an adequate mutual aid system was in existence.

The experience of the Boston Fire Department has indicated that quicker and heavier response of apparatus to alarms has substantially reduced the number of large-loss fires. It is therefore reasonable to assume that a comprehensive system of mutual aid among fire departments in the Boston area would undoubtedly promote a like result.



A Four-City System Near Boston

A typical system in operation at present is that embracing the cities of Chelsea, Everett, Malden and Revere. This system was developed by the fire chiefs of these four communities. It provides for inter-city response to line boxes, response and covering-in on multiple-alarm fires in each of the cities included in the agreement, and response to alarms in the adjoining cities, where two boxes have been pulled and an alarm is received from a third box.

The system also provides for the inclusion of Medford, Winthrop, Somerville, Lynn and Boston companies on fourth-alarm response, depending, of course, on the location of the box pulled. The arrangements with these five latter communities, while included on the printed assignment cards of Everett, Chelsea, Revere and Malden, are less definite, and aid from these cities must be called by telephone.

The actual working-out of this system has been accomplished by running a fire-alarm circuit from each of the interested communities to one or more fire stations in the others. One of the weak points in this system appears to be that it is not adequately tied into Boston. With adequate cooperation from Boston, the system could be simplified, additional companies could be made available on multiple alarms, shorter runs could be worked out (with modern traffic con-

ditions this is important) and the territory vacated by responding companies could be better covered.

How Large an Area?

How much territory is it practical to cover? The answer to this question depends largely upon local conditions. The Egyptian Fire Fighters Association in southern Illinois, a mutual aid system among some 68 communities, embraces a very considerable territory. This system has been very carefully worked out and is so arranged that no community is left without protection at any time. The Westchester County, N. Y., mutual aid system is another large system now in operation. The main point to consider in the matter of territory covered is the distribution of companies so that all areas will be adequately safeguarded. A prearranged and printed running card *must* be developed and strictly adhered to.

Extension of fire-alarm systems to be intercommunicating is distinctly advisable, and practical in most instances. The experience during a recent fire in a town near Boston, when more than twenty minutes was required for the superintendent of fire alarms in an adjoining city who had responded to the mutual call to get his own office by telephone, clearly indicates the value of fire-alarm connections between cities.

It is, however, impracticable in some instances to have intercommunicating fire-alarm systems. In such cases, by the use of code words or by calling back, the problem of the unauthorized telephone calls for aid can be eliminated.

Adequate Equipment Essential

Finally, a word of warning. Use mutual aid, but don't rely on it to the extent of not recommending or obtaining adequate equipment for your own department. Remember, your responsibility is to your own city or town and upon you rests the duty to provide adequate protection against fire. See to it that your equipment is adequate and complete, and depend upon your mutual aid when an emergency arises. Let your neighbors see that you have made every effort to protect yourself, and they will be more willing to help you when you need them.

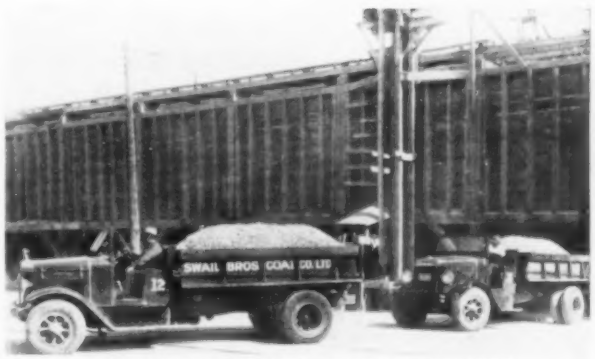
—From a recent address before the Massachusetts Chiefs' Club.

Municipal Paving Plant in Winnipeg with Contract Hauling

WINNIPEG is a fast-developing city of some 200,000 inhabitants. It is the metropolis of the Prairie Provinces of Canada, famed as one of the most important grain-growing regions of the world. In keeping with its substantial growth, a comprehensive campaign of street surfacing has been inaugurated. The first paving work was done in 1897. At the end of 1929 the mileage of improved streets had become as follows: macadam, 30.7 miles; cedar blocks, 22.69 miles; asphalt, 155.7 miles; concrete, 32.4 miles; and graded and graveled, 320.5 miles. Work specified for 1930 included 5 miles of asphalt and 9 miles of concrete.

To facilitate the distribution of its street-building materials, the city of Winnipeg has constructed in Ross Avenue a plant which covers a square block, where all concrete for street surfacing is mixed and where 32 100-yard overhead bins are available for the storage of dry material.

The dry material is delivered to bins from railroad cars, which are moved to a high-line above the bins. Space is available under all bins so that a motor truck can be backed in and very quickly take a load of any material desired. Equipment at this plant includes a 1½-yard concrete mixer, eight rubber-belt conveyors, screens for separating pit-run gravel, rock crusher, etc., all of which are electrically operated. The concrete mixer is operated by a 25-hp. motor, and the crusher, which has a capacity of from 50 to 60 yards per hour, by a 100-hp. motor. Crushed rock is obtained from the city's big Stoney Mountain plant, where three crushers are operated and from 40 to 60 men employed. Gravel is obtained from Bird's Hill pit, 10 miles out.



CONTRACTORS' TRUCKS HAULING CRUSHED ROCK FROM THE BINS AT THE MUNICIPAL PLANT

DELIVERING A LOAD OF READY-MIXED CONCRETE TO THE ROAD

SWAIL BROS. LIMITED—DRIVER'S DAILY REPORT

THE DRIVER'S DAILY REPORT FORM USED BY THE HAULING CONTRACTOR AT WINNIPEG

Hauling

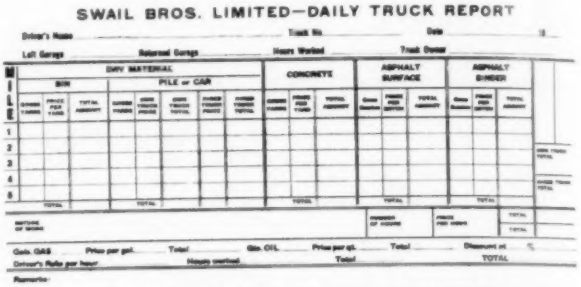
The hauling of these materials is handled by Swail Brothers by contract throughout the paving season. The transportation of ready-mixed concrete is quite a job in itself, as the big concrete mixer is able to deliver a 1½-yard load of concrete every two minutes. This means that when the mixer is steadily working, one truck must be continually backing in as another is pulling out with its load. The longest haul for the ready-mixed concrete is 4 miles. A maximum for one day from the Ross Avenue plant has been 315 loads of concrete and 450 yards of dry material. The asphalt of course is hauled hot to its destination, dump-trucks with tarpaulin covers being used for the purpose. The average mileage of a round trip for a single trip is 8 miles, and each truck travels from 80 to 100 miles in a 10-hour day.

All motor trucks in the Swail Brothers fleet are equipped with 2-yard bodies with side boards and hydraulic hoists. The bodies are painted black, and the chassis of each truck is painted red. All trucks in this fleet are of the International-Harvester speed-truck type.

To obtain the contract for hauling the city's paving materials, Swail Brothers, Limited, of course had to put in the lowest bid, which for concrete was 40 cents per yard for the first mile, 75 cents the second, $1.05 the third, and $1.10 for the fourth mile. For hauling gravel and crushed stone similar distances, the rates were respectively 28 cents, 40 cents, 50 cents, and 60 cents. Careful check is made both by a city representative and by means of drivers' reports of all materials hauled. Special forms on which daily driver and truck performance are recorded are reproduced in accompanying illustrations. The city representative makes out a ticket in triplicate for each load, one of which goes to the city's head office, another to the foreman on the job, and the third to Swail Brothers, Limited.

A separate asphalt plant has been constructed in Water

SWAIL BROS. LIMITED—DAILY TRUCK REPORT



THE FORM USED BY THE CONTRACTOR FOR REPORTING THE WORK OF EACH TRUCK EACH DAY

Street. This plant can deliver sufficient binder and surface material to lay 1,200 feet of pavement 24 feet wide in an 8-hour day.

All cost, hauling, and operating data are recapitulated on monthly sheets. From figures on these sheets, the cost of operating each truck and the amount it is earning are figured. Careful check of each motor truck each night is made by a special mechanic employed for the purpose. This man makes necessary adjustments and minor repairs and greases the trucks. In case of mechanical difficulties while a truck is in operation, a day service man is available to rectify the trouble. Even in case of tire work, the service man is called upon to make the changes.

Let the Police Have "The Breaks" Rather Than the Criminal

IN the corridor of the Portland, Ore., city jail is erected one of the most interesting stages in the country. A "show" is put on each morning at 8:30 and each night at 5:00. While the "actors" cannot be said to enjoy their part in the program, there is an interested and appreciative audience—even if the actors cannot see them.

This is the line-up stage, for the benefit of the detectives of the city. Through its use, they are enabled to study suspects without being in turn scrutinized by the criminals themselves, as has formerly been the case. Until this stage was planned by Captain Thatcher, and the city council made an appropriation that made its immediate construction possible, it was the custom for the criminals to be lined up in a large room for the detectives to inspect. There was just as much opportunity for the criminal to study the "bulls" as for the latter to study them!

The wall back of the stage is painted black. Three feet or so from the wall a specially built curtain of a loosely woven fabric is dropped. Footlights at the top of the curtains and just inside throw their glare toward the back wall.

The procedure is for each criminal to be taken from his cell by the jailor and placed between the wall and the curtain. He is directed to walk slowly back and forth, giving the detectives (in the dark on the opposite side of the curtain) a study of his profile from either side. Next he is directed to face the curtain, to give the detectives a view of his face in full, and then he turns his back, so that they can see how he looks from the rear. By graduation marks on the back wall, the detectives get an exact idea of the height of each criminal as he paces before it.

The glare of lights in his face makes it impossible for the criminal to see the detectives, while they can see him as clearly as though there were no curtain there. The viewers do not talk, so that not even their voices become familiar to the suspects. While each criminal is being paraded, the lieutenant in charge reads the man's record from his identification card. Then, if a detective sees someone whom he has arrested before, and wants to talk to him, he waits until the line-up is over, and then has the prisoner brought to the corridor for the interview.

By this new method, every detective has an opportunity to size up every suspected criminal who is brought in for violation of the law.

M. N. DAVIS

Booster Station and Water-Main Cleaning Solve a Supply Problem at Columbus, Ohio

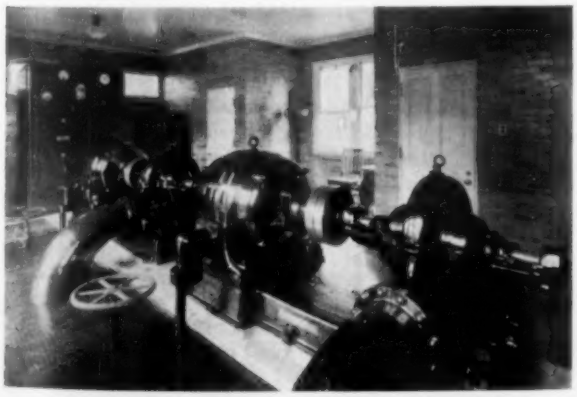
The Hilltop Section of Columbus Now Amply Supplied with Water After Years of Low Pressure

ALMOST every municipality suffers at one time or another when the building growth in certain districts runs ahead of the development of the water system. Although the water supply and water works may be more than adequate for the needs when constructed, the rapid growth of the outlying districts brings a water consumption in those districts that overtaxes the capacity of the mains, and deposits within the mains decrease their carrying capacity. At times of peak consumption, usually during the late afternoon hours in summer, conditions may be so bad as to leave the more distant homes without any water.

During the last few years the Hilltop section of Columbus, Ohio, has enjoyed such a rapid growth that until certain improvements were made it was impossible to supply enough water to it with the existing equipment. To meet this condition, the City Water Department of Columbus, after careful investigation, installed a booster station on the main serving this district.

The Water Department of Columbus considered three means for improving the conditions at Hilltop. First, the size of the mains in the distributing system could be increased. Second, the pressure at the pumping station might be increased in order to force more water through the existing mains. Third, booster stations might be installed on the mains serving the affected district, to operate either with or without standpipes. It was decided that the third method would be the cheapest in both first cost and over-all operating cost.

The booster station was carefully designed by city engineers and the controls and operating equipment were placed in a position to be very convenient and accessible. The two pumping units, both Fairbanks-Morse 10-inch ball-bearing centrifugal pumps, driven by 125-horsepower motors, were placed end to end on the same foundation



INTERIOR OF THE BOOSTER STATION, SHOWING THE TWO RECENTLY INSTALLED FAIRBANKS-MORSE MOTOR-DRIVEN CENTRIFUGAL PUMPS

THE HILLTOP BOOSTER STATION AT COLUMBUS, OHIO

with all suction piping and valves in a gullet below the floor level on one side, and all the discharge piping in a similar gullet on the other side. The steel floor plates covering these gullets are removable, giving instant access to all of the piping and valves. The switchboard carrying the meters and the main line and distributing switches is placed at one end of the station, with a starting compensator on each side of the switchboard. Both the board and the compensators are set away from the wall, so that they may be worked on from the rear, if necessary. The station building is very attractively built of brick with wood trim painted white.

Equipment Tested Before Acceptance

The City Water Department ran elaborate tests before accepting the pumping installation. The 10-inch pump has a normal capacity of 2,000 gallons per minute when pumping against a total head of 135 feet, and 3,000 gallons per minute when pumping against a total head of 115 feet. The suction and discharge lines are 16 inches in diameter and are connected to the pumps through suitable reducing elbows. The results of the official tests showed that the capacity guaranteed was exceeded in the test on both pumps. The contract with the city required that the pumps should deliver specified quantities of water when operating against certain total heads, using not more than certain specified quantities of electrical energy in so doing. During these tests the total heads guaranteed in the capacities mentioned were exceeded slightly. The weighted average current consumption was less than the guaranteed consumption.

Four tests in all were made. The first three tests had a duration of two hours, and the last test was stopped by all parties concerned at the end of 1½ hours. All readings

were taken at 5-minute intervals. The total head on the pump was measured with 10-inch Bourbon pressure gages attached to the pump suction and discharge nozzles, and the quantity of water pumped was measured by a venturi meter. A discharge coefficient of 0.98 furnished by the builders was used in calculating the flow. A 30-inch U-tube mercury manometer was attached directly to the piezometer ring with short connecting pipes for determining the differential head between the entry and throat of the venturi tube. The connecting pipe was properly vented at the highest point to prevent air pocketing. The current consumption was determined by a polyphase indicating watt meter with separate current transformers.

Precautions were taken and all possible checks were made to be sure that all water pumped was being accounted for by the venturi meter and in passing through the idle pump or through the bypass outside the station. During the tests the pumps and motors ran in a very satisfactory manner. At the 3,000-gallon-per-minute rate of pumping, the maximum power developed by the motors was 118½ horsepower, which is slightly under their full load rating.

Only one pump at a time is ordinarily run, the other being held in reserve unless the demand for water is extremely heavy. In that case, the reserve pump can be operated in parallel with the one already in service. A push-button-operated starting compensator is installed for each unit, as it may be desirable at some later date to control the pumps from the main pumping station, which is three miles away. This station was placed in service on July 1, 1930.

Peak Demands Tax Booster Station

The consumption of water during July, 1930, was from 125 to 150 per cent above the average, and it was found that the 20-inch feeder main, even with the booster station, would not meet the peak demands of this district. Actual tests indicated a loss of about 40 pounds pressure from the point where the 20-inch main was tapped into a 36-inch line to the booster station, a distance of 8,000 feet. It was then decided to attempt to recover this excessive loss of pressure by cleaning the 8,000 feet of 20-inch main, and this was done by the National Water Main Cleaning Co. on August 2, 1930.

Before the main was cleaned, the inlet pressure at the booster station dropped to zero when the pumps were operating at a rate of 4½ million gallons daily with only 75 pounds on the discharge side. After the main was cleaned, the station was able to deliver water at the rate of 7 million gallons daily at 85 pounds pressure with an inlet pressure of 35 pounds.

The cleaning of this main was followed by the cleaning of 11,200 feet of 20-inch main on the discharge side of the booster station, and the cleaning of 6,400 feet of 12-inch main in the same district. Both operations resulted in a marked improvement in the delivery capacity through the district.

The reduction in carrying capacity was caused by deposits of insoluble calcium carbonate which had accumulated over a period of 20 years of softening the city water by the lime-soda-ash process. This deposit is not smooth on the inside of the pipe, but is serrated, and for this reason the loss of head was greater than that which would have been caused by the same reduction in diameter but with a smooth coating.

Only one cut-in and one cut-out was required for each of the above-mentioned pipe-cleaning jobs. The work was done between the hours of 10 P.M. and 6 A.M., and less difficulty was experienced with the clogging of service connections than was expected. The work was carried on by the National Water Main Cleaning Co. under the direction of Clarence B. Hoover, Superintendent of Water Works.

Improperly Maintained Sewer as Liability

By A. L. H. STREET

THAT it has often proved to be a "sewercidal" policy for a city to neglect maintenance of its sewers is demonstrated by a long line of appellate court decisions on the subject. A standard legal authority cites decisions from nearly every state in the Union in support of a statement that "a municipality may also be held liable for misfeasance or nonfeasance in the performance of its duty to exercise reasonable care in the maintenance of its sewers, drains, and watercourses and to keep them in reasonable repair and free from obstruction," etc. (43 Corpus Juris, 1130.)

In one case (*Talcott v. City of New York*, 58 App. Div. 514), the Appellate Division of the New York Supreme Court decided that where a sewer becomes clogged, causing injury to an abutting owner, negligence on the part of the city, fixing liability for the damage done, may be inferred from the fact of clogging, where no unusual condition beyond the control of the city is shown and where the city makes no explanation exculpating itself.

On the other hand, the same court declared in the case of *Beyer v. City of New York*, 141 App. Div. 679, that the city was not liable for the backing-up of a sewer due to children's having clogged it with sticks, where it did not appear that the city was careless in either discovering the clogged condition before the damage was done or in removing the obstruction after it was discovered.

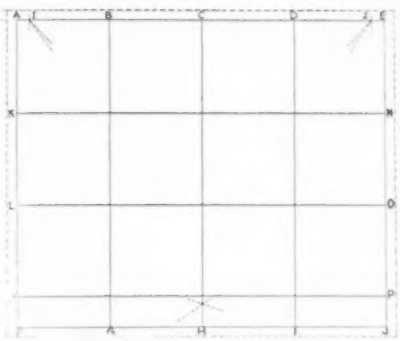
In the comparatively recent case of *City of Portsmouth v. Mitchell Manufacturing Co.*, 113 Ohio St. 250, the Ohio Supreme Court upheld a recovery of damages for injury to goods in a basement through the backing-up of an obstructed sewer, adopting a declaration by the New York Court of Appeals in *McCarthy v. Syracuse*, 46 N. Y. 194, that the duty of a city to keep its sewers in repair "involves the exercise of a reasonable degree of watchfulness in ascertaining their condition, from time to time, and preventing them from becoming dilapidated or obstructed. Where the obstruction or dilapidation is an ordinary result of the use of the sewer, which ought to be anticipated and could be guarded against by occasional examination and cleansing, the omission to make such examinations and to keep the sewers clear is a neglect of duty which renders the city liable."

One of the decisions illustrating the non-liability of a city for a clogging as to which it was not negligent is to be found in the opinion of one of the Missouri courts of appeal (*Hawkins v. Springfield*, 194 Mo. App. 151), where a sewer backed up because clogged by an old quilt.

But there are numerous decisions to the effect that, regardless of fault in *causing* the original obstruction, a city is liable for negligent delay in *removing* the obstruction. (See *Taylor v. Austin*, 32 Minn. 247; *Savannah v. Cleary*, 67 Ga. 153; *Murphy v. Atlantic Highlands*, 77 N. J. L. 452.)

Accuracy in Maps More Important Than Ever

By
ROBERT CARLTON SHERWOOD
City Engineer's Office,
Columbus, Ohio



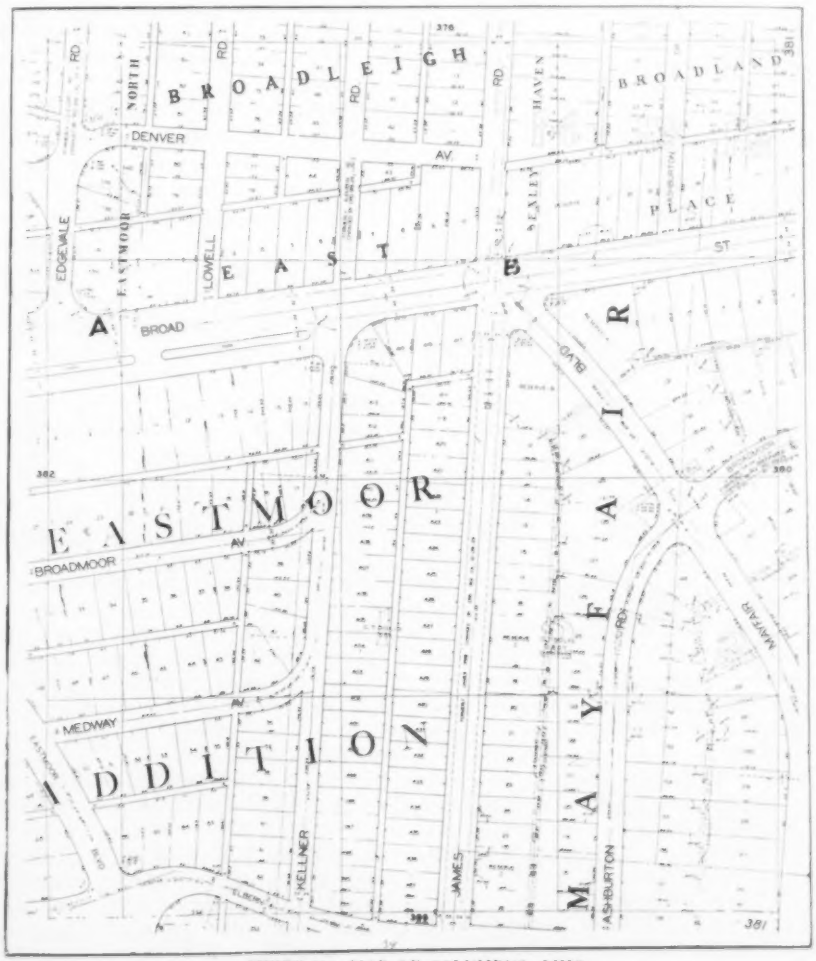
LAYOUT OF COORDINATE LINES

Draw base line A E, and lay off A B—B C—C D and D E at equal intervals of 500 feet. From C erect a perpendicular C H by arcs from points 1 and 2 (equidistant from C). From the same points 1 and 2 draw arcs near F and J, using a radius of 1,667 feet. The line F J is tangent to these arcs. From H lay off H E, H G, H I, H J, at 500-foot intervals, and connect points for coordinate lines perpendicular to the base line. On lines A F and E J, from A and E respectively, lay off points at 500-foot intervals and connect for coordinate lines parallel to the base line. The dotted line represents the lap and may be established arbitrarily

THE importance of maps of all kinds has probably never been so general since they were first made as at the present time. Vast hordes of automobile tourists now seek the far corners of the earth and are demanding not only better roads, but better maps as well. And, too, airplane traffic is developing intersectional and transcontinental maps of all countries of the world to show not only roadways, but topography, direction of prevailing winds, rainfall, etc. But, usually, such maps as these are merely pictures and their makers are not concerned with accuracy of detail, except to a certain degree. They have no reason to be, for the user will not know nor care about slight discrepancies in distance and orientation. However, there are certain types of maps where accuracy is of paramount importance. These are necessarily detail maps of large scale—40, 50 or 60 feet per inch.

Take for a specific example, the detail maps of municipalities which delineate the lots and lands included in and contiguous to the corporation line of a city. These maps form the basis for all engineering projects and real-estate development. They are essential in drawing plans for street improvements, sewer lines and all public utilities, but it is in their relation to subdivisions that they find their greatest usefulness and their accuracy becomes so important.

For detail maps it is necessary to have adequate surveys of the territory to be mapped. Cities of large area should have a geodetic survey made, establishing primary stations conveniently so that secondary lines may be run to locate property corners, and these corners should be located approximately every 2,000 feet. Coordinates may then be figured for all these property corners and located by this method on the drawings in their proper orientation with a degree of accuracy that depends only on the carefulness of the draftsman, as the personal equation can never be eliminated. However, by this method of using coordinates, even a mediocre or less painstaking draftsman may produce acceptable work because, if the surveys are closed and balanced, errors in platting points of the survey are not cumulative.



SHEET 381, MAP OF COLUMBUS, OHIO

Monuments at points "A" and "B" on Broad Street were located by a survey east on Broad Street to James Road, thence south

Paper

There are several points ordinarily considered as of minor importance, but, in reality, very vital to the completed drawing. The first one, obviously, is the quality of the paper in the mounted sheet. If it is not of the best

quality and mounted without wrinkles it will not hold its shape and, in consequence, the map will lose its original accuracy. The second item to be considered presents more of a problem to handle and is due to the fact that the paper will stretch in damp or wet weather and shrink when it dries again. Here it will be necessary to do a bit of experimenting to find whether the sheet resumes its exact original size or whether a part of its first stretch will remain permanent. The first step in this experiment is to see that the sheet is perfectly dry. If a blueprint machine is available, a simple way to dry out these sheets is to put them through the machine, having the arc lights quite hot, until no more shrinkage occurs. Now rule two lines on the sheet a certain known distance apart. After the first damp weather when the sheet has had ample opportunity to stretch, measure the distance between the lines, then dry out the sheet again, after which a final measurement will show whether or not the sheet has resumed its original size. The sheet should now be permanently set and the coordinate lines may be ruled while it is dry.

Before platting on a sheet it is a wise precaution to check the coordinates, drying out the sheet if necessary. If this precaution is not observed and the work done when the paper is stretched, contiguous sheets will not match and, weeks later, if distances are checked over, it will be found that they will not scale true as to distance between points and it will be necessary to re-draw the sheet, or let it remain out of scale, as is often done.

Ruling Coordinates

Another "minor" feature, but one that is quite important, is the method used in ruling the coordinate lines. It is convenient to use lines 500 feet apart and a base or boundary line will be drawn along the long side of the sheet. In the center of this line (and in the center of the sheet) erect a perpendicular, using the time-honored method described in our geometry textbooks. The other coordinate lines may be ruled by parallels to the base line and its perpendicular. There may be those who would insist on using triangles to draw these perpendiculars, but it is quite doubtful whether they may thus be made as accurately. A check measurement across the diagonals of any 500-foot square will determine this point.

It is perhaps "passé" to mention that the platting of all points should be done with a fine needle point and lines ruled with a fine, sharp point on the pencil. The hardest pencils are best, but this is more or less a personal matter.

There may be some question in the reader's mind whether accuracy hedged about by all these precautions is really worth having. To some who would prefer to figure out mathematical distances between points on unsubdivided parcels, perhaps it is not, but there is a lot of satisfaction in being able to lay a scale on a drawing and read the distance between two points correctly.

Maps as Checks on Surveys

Suppose now, by way of illustration, that a new plat of a subdivision is brought into the engineering department for approval. Even though there were no distances given on the maps, it requires only a few moment's time to determine whether the survey is correct as far as the boundaries are concerned. If the surveyor has made an error it may positively be found and proved. Further checking may be necessary to determine whether or not the streets meet existing streets, but this is easy to do when working with accurate maps.

An actual example of this happened where an error was discovered by the above means. The surveyor had mis-located the corner of a street which was one point in his boundary line. Checking his survey distances on the map showed the corner to be about 3½ feet out in the street. The surveyor was notified, the error was found to be exactly as the maps showed and it was rectified on his plat. Consequently, when the plat was recorded, it was correct.

Mistakes of this character often happen and are found on recorded plats, but at present in Ohio there is no provision for correcting such mistakes except by filing an amended or corrected plat. The county recorder cannot be expected to know how to find errors, and if he does, he has no alternative but to record the plat as it comes to him. The city engineer or the county surveyor should take the initiative and establish some adequate method of checking plats because of the growing importance of having accurate information as to the location of property lines in municipalities, where errors often lead to court action. Until the law is changed or some other remedy is provided, the only solution available is to have a set of accurate detail maps.

Drouth Relief Handicapped by Bad Roads

CONDITIONS reported from the drouth-stricken areas by representatives of the American Red Cross make one wonder how much of the suffering in those regions is due to "acts of God" and how much to the short-sightedness of human beings in failing to build highways fit for the motor age. The following paragraphs are from an editorial entitled "Drouth Relief Work in the Back Areas," in *The Red Cross Courier* for February 2, 1931:

"The field representatives who have been at work for months in the areas of drouth suffering, it is evident from reports, have carried out their duties courageously in the face of difficulties multiplied by weather conditions and lack of transportation facilities of discouraging proportions. Despite the general travel by automobile along the main highways, few persons have knowledge of the back country and its web of dirt and clay roads, rocky passages over hills, frequent unbridged streams which must be forded. The drouth-affected states present every character of roadway, a large percentage offering precarious traction for car or animal. Distances as the crow flies are non-existent in the back areas, hence the 50-mile pace on concrete surfaces is reduced to practically nothing-at-all per mile back from the main highways.

"An illuminating example is extracted from the experience of a field worker in east-central Kentucky, who tells of traveling more than 100 miles to reach a town less than 20 miles away, the trip requiring the better part of two days. 'The weeks of rain and snow,' he writes, 'have covered the roads with ice on which even bus lines would not venture. No car, horse or mule can negotiate them, nor the side roads which are knee-deep in mud. On one trip we were always in danger of sliding off the mountain; we skidded backward down grades, then were compelled to walk miles to our destination through snow, water and mud. Once the car pivoted around and crashed into the mountain. Yes, these mountains look a lot different trying to get over them than they do from a Pullman window.'"

Lexington Doubles Its Park Acreage

By **L. SEGOE**
Consulting Engineer,
City Planner,
Cincinnati, Ohio

UNTIL recently the development of Lexington, Ky., was of an exceptionally open character. In the diaries of early travelers, Lexington is described as a city of attractive homes on large allotments and of spacious open grounds. Substantial family homesteads on plots of one or more acres were the predominating type of development even in the central section of the city. The surrounding countryside, "equal in beauty and fertility to anything the imagination can paint," was also accessible to any one desiring to turn to nature for either passive or active recreation.

However, within the last few decades, the use and occupancy of land in the city has become greatly intensified. Large home sites have been subdivided into exceptionally small building lots, and apartment houses have replaced the old mansions. With the gradual increase of land values, the surrounding open country also became thickly settled, and the more intensive use of land for farming or for stock raising has rendered the countryside unavailable for recreational purposes. The private open spaces that provided so generously for the admission of air and sunlight and for the recreation of children and adults alike, have gradually disappeared or been withdrawn from the possibility of such use. At the same time, the need for recreational open spaces has become increasingly intensified with the growth and concentration of population. The elimination, by the motor car, of the public street as a play space for children or for walking and riding further aggravated the situation.

Unfortunately, very little was done by the city to meet this growing demand for parks and playgrounds. The population of Lexington, including the built-up subdivisions adjacent to the city limits, is approximately 56,000. At the beginning of 1930, there were only 42.53 acres of publicly owned and operated parks and playgrounds in the entire city (exclusive of school playgrounds), giving a ratio of one acre of public recreational grounds to about every 1,050 inhabitants in the city and to about 1,300 persons within the built-up area. These figures compare very unfavorably with the average for cities of about the same size, which is around 150 persons per acre of park and playground properties.

Looking Around and Ahead

Within a few months of the passage by the State Legislature of the City Planning Enabling Act in July, 1928, a City Planning and Zoning Commission was organized in Lexington. This Commission is of regional character, since it is composed of representatives of the city as well as the county, and its work is limited geographically only by the limits of Fayette County, in the approximate center of which Lexington is located. Early in 1929, the Commission began the preparation of a comprehensive city and regional plan, including the study of the recreational needs of the city and the urbanized belt around it. About a year later, the Commission submitted to the city authorities a report and a plan for a proposed recreation system. In its report, the Commission forcefully pointed out the great deficiency in parks and playgrounds and the urgency of meeting this deficiency. It strongly urged the "giving of immediate attention to the acquisition of additional park

A RECENT ACQUISITION IN LEXINGTON

The "Castlewood property," now being converted to public park purposes, as one of the first steps in the carrying-out of the program which provides for over 11,000 acres of recreation grounds

and playground properties and to the development of a coordinated and balanced system of public recreation areas."

In the plan for the recreation system proposed by the Commission and adopted since *in toto* by the city authorities, the Commission provided for the following types of recreational areas:

I. Playgrounds and Playfields
   1. Playgrounds or playlots for little children of kindergarten age and under
   2. Children's playgrounds for children from 5 to 14 years of age (attached to the elementary and intermediate schools)
   3. Playfields for youths from 15 up and for adults

II. Parks
   1. Neighborhood parks
   2. Outlying reservations

III. Boulevards and Parkways

Definite Action

The plan is accompanied by a program for the acquisition within the next forty years of the entire proposed recreation system. This has also been adopted by the city authorities. The proposed plan covers approximately 1,135 acres of recreational grounds of all sorts and will provide, when carried out, one acre of recreational area for approximately 72 persons within the built-up area of the region; 900 acres are to be in large outlying parks of the reservation type.

At this time, within only six months after the submission of the Commission's Plan and Report to the city authorities, two of the parks proposed by the Commission, with a total of 33 acres, have been acquired by the city, almost doubling thereby the city's park and playground acreage.

One of these two parks is a small area of about 3 acres for the colored population. Funds for this park have been available in the city treasury for several years, but the uncertainty as to the location, in the absence of any comprehensive plan, as well as conflicting interests, hindered the city authorities in making a selection and in providing thereby a much-needed breathing space for an extremely intensively settled district. A site chosen by the Planning Commission for this park, as a part of a comprehensive plan for the recreation system, met with general approval, and action followed. The acquisition of a beautifully wooded tract of thirty acres on the edge of existing developments not only met with similar approval throughout the city, but has aroused considerable popular interest for the acquisition of additional park areas and the carrying-out of the plan proposed by the Commission.

By reason of the public interest aroused by these recent acquisitions of park areas, which were the direct result of the preparation by the City Planning and Zoning Commission of a plan for a recreation system as a part of a comprehensive city and regional plan, and by reason of certain changes in the water-supply system of the city, there is an excellent chance that the city may add to its recreational facilities an area of about 800 acres of wooded land including two or three reservoirs of a private water company, recommended for such purpose by the Commission's Plan.

The Need and Value of Secondary Road Maintenance

Methods Used in Burlington County, N. J.

By H. B. SMITH
County Engineer, and

L. A. MacFARLAND
Supervisor of Roads, Burlington County, N. J.

TO a large extent the problem of the construction and maintenance of heavy-duty highways is solved. With sufficient resources, the highway engineer today can design and build highways to carry unlimited traffic with the minimum cost for maintenance. The secondary road problem, however, is still unsolved. Where the secondary roads are in a transitory state, that is, where the volume of traffic is too great for the existing surface and yet not great enough to warrant heavy-duty construction, the problem is even more puzzling.

Burlington County, N. J., lying as it does in the southern portion of New Jersey and extending from the Delaware River to the ocean, has a particularly difficult problem to face in maintaining its secondary road system. Traffic from the great metropolitan areas of New York and Philadelphia passes through the county on the way to the shore resorts of New Jersey. As the traffic on the main arteries becomes congested, many through cars use the secondary system, particularly for week-end and holiday trips. Summer camps and other property developments in the pine woods add to the traffic and increase the maintenance and repairs required on these roads during the summer season. The total value of traffic on a yearly basis, however, does not warrant reconstruction on an extensive scale.

Burlington County is not alone in facing this problem. The entire country from north to south and east to west is puzzling over the same problem, namely, the economical maintenance and repair of secondary roads to carry intermittent traffic of high peak intensity. What the final solution of this problem will be in other communities is uncertain, but in Burlington County the problem has been partially solved through a new type of resurfacing.

For the past few years Burlington County has been making an intensive study of the maintenance and repair of its secondary roads and has done considerable experimental work. During 1930, a section of an old gravel road, passing through a portion of the pine belt where a development company has made some extensive improvements and sold considerable property, was treated in an entirely new manner.

Type of Reconstruction Used

The road originally was an old macadam from 10 to 12 feet in width, and during the preceding four years had been treated with a slow-curing or asphaltic base oil. From time to time as traffic increased, the roadway had been widened with gravel to 20 feet, the slopes trimmed and other minor improvements made. The excessively heavy summer traffic on this road made the question of future maintenance a serious matter.

In rebuilding this road to put it in shape to handle the heavy traffic with a lower maintenance cost, the old oiled gravel surface of the road was first thoroughly scarified to a depth of approximately 4 inches. The old gravel and oil was thoroughly and uniformly mixed together by scraping the loosened material back and forth with power scrapers until all fat or rich spots were broken up. The road was then reshaped to a uniform grade and contour, using the mixed material.

Following this, the road was opened to traffic for a period of about ten days to secure compaction of the surface by the traffic itself. A power scraper was maintained on the road to prevent ruts and depressions from forming. Following this, the surface was covered with ¾-inch trap rock, using approximately 100 pounds per square yard. This was rolled in with a 10-ton power roller until it presented a uniform compacted surface. A penetration coat of hot tar, grade U[3] as specified in the standard form of specifications for county highways, state of New Jersey, was then applied to the stone surface by means of a pressure distributor at the rate of 0.6-gallon per square yard. Immediately after the application of the tar, the surface was covered with ½-inch stone chips, using 20 pounds to the square yard, and the surface rolled to compaction with a 10-ton power roller. The road was then opened to traffic for a period of three or four days in order to detect any weak spots which might exist.

ROAD AFTER PENETRATION STONE TREATMENT

GRAVEL ROAD AFTER THREE YEARS' TREATMENT OF S.C.O. OR ASPHALTIC BASE OIL

SPECIFICATIONS FOR GRADE U³ TAR FOR NEW JERSEY COUNTY HIGHWAYS

		Min.	Max.
1.	Specific gravity at 25 degrees Centigrade	1.15	1.205
2.	Float test at 50 degrees Centigrade (sec.)	80.0	110.0
3.	Viscosity at 40 degrees Centigrade 1st 50 c.c.—Engler (sec.)		
4.	Free carbon (using CS_2; cold)		5.0 per cent
5.	Distillation—Total up to 170 degrees Centigrade		1.0 " "
6.	Distillation—Total up to 235 degrees Centigrade		3.0 " "
7.	Distillation—Total up to 270 degrees Centigrade		11.0 " "
8.	Distillation—Total up to 300 degrees Centigrade		22.0 " "
9.	Melting point of distillation (residue B. & R.)		65 degrees C.

Next, a seal coat of hot tar grade U³ was applied at the rate of 1/3-gallon per square yard over the penetration surface, using a pressure distributor. Immediately after the application of this seal coat the surface was covered with ½-inch stone chips, using 15 pounds per square yard, and rolled again with 10-ton rollers and opened to traffic.

The work was carried out as planned under the direction of the Supervisor of Roads for the county, using both county forces and county equipment. With the exception of a few soft spots, no difficulties were encountered. The so-called soft spots were places where the old gravel base was sandy and did not readily compact. Where these occurred, it was necessary to sweep the holes out and place additional stone to stiffen the base.

Costs

The cost of doing this work, figured on a square yard basis, using county equipment, was approximately 45 cents, but, as material and haulage costs vary considerably in different sections, these figures would probably have to be modified to meet existing local conditions.

SUMMARY OF COSTS

Scarifying and shaping existing road			$0.05 per square yard
135 pounds of stone per square yard (f. o. b. siding)	@ $2.22 per ton		
Unloading (crane)	0.17 " "		
Haulage	0.45 " "		
Labor and tools	0.26 " "		
Rolling	0.20 " "		
	$3.30 " "	0.22 " "	"
1 gallon of tar U³ @ 16 cents per gallon delivered and applied		0.16 " "	"
Total cost		$0.43 " "	"

The road, when finished, presented an excellent surface, and many favorable comments were received. Over a period of six months the road has held up admirably, but before adopting it as a surface for the many miles of oiled treated gravel roads throughout the county, it will be allowed to stand the test of another year's service.

Conflicting Decisions as to Distribution of Advertisements in Public Places

By A. L. H. STREET

IN the case of *City of Chicago v. Schultz*, 173 N. E. 276, the Illinois Supreme Court adjudged to be void an ordinance reading as follows:

"It shall be unlawful for any person, firm or corporation, whether a licensed bill-poster or sign painter or not, to distribute, hand out or scatter upon any street, avenue, alley, sidewalk or other public place in the city of Chicago, any circular, dodger, handbills, pamphlet, card, picture, or any advertising matter of any kind whatsoever, or to distribute handbills or other advertising matter at houses, stores, or places of business, otherwise than by putting the same under doors or in letter-boxes connected with the houses, stores or places of business, and when so distributing, no bell connected with the houses, stores or places of business shall be rung."

The Court said, in part:

"There is no express grant of power to a city which enables it to pass an ordinance prohibiting a person from handing out a circular, card, picture, or advertising matter of any description whatsoever, in or upon its public streets or sidewalks. Such power, if implied, must be reasonably exercised. The handing out on a public street, sidewalk, or public place of a 'circular, dodger, handbills, pamphlet, card, picture, or any advertising matter of any kind whatsoever,' is not, of itself, any offense. On the contrary, such practices, as a general rule, are harmless incidents of our everyday life. If this ordinance should be upheld, every person who hands his card or picture to another while on a public street or sidewalk or in a public place within the city of Chicago will be subject to a fine. The ordinance also prohibits the handing out or distribution 'of any advertising matter of any kind whatsoever,' and it would seem that under this broad restriction the distribution of newspapers would also be prohibited, as they all contain advertising matter. Laws which attempt to regulate and restrain our conduct in matters of mere indifference, without any good end in view, are regulations destructive of liberty. Under our Constitution and system of government the object and aim are to leave the individual entirely master of his own conduct, except where the public good requires some direction or restraint."

In the slightly later case of *City of Milwaukee v. Kassen*, 234 N. W. 352, decided by the Wisconsin Supreme Court, January 13, 1931, an ordinance prohibiting the distribution of "any circulars, handbills, cards, posters, dodgers, or other printed or advertising matter," was sustained as being valid. The Court cited a decision of the Nebraska Supreme Court (*In re Anderson*, 96 N. W. 149) pointing to the promotion of public health and prevention of fires as justifying such ordinances.

The Wisconsin opinion refers to the above-cited decision in the Chicago case, and also to a similar decision of the Michigan Supreme Court in *People v. Armstrong*, 41 N. W. 275. Distinguishing those cases, the Wisconsin Court said:

"The fundamental proposition behind these two cases cannot be denied. The ordinance must be a reasonable exercise of the police power. The difference between the Illinois case and our view of this case is probably irreconcilable, and proceeds from a difference in interpretation of the ordinance. As we construe the ordinance, it is designed to forbid, not an isolated handing of a card or handbill, but the general circulation of handbills and other printed matter of the same character, which experience has shown is more frequently than not consigned to the public streets, rendering them unsightly, frightening horses, clogging sewers, and otherwise resulting in public inconvenience. In the Illinois case the Court construed the ordinance as making it an offense to hand one's picture or card to another on the public highway. We cannot agree to this interpretation.

"So far as the record in this case discloses, there is no charge that the ordinance is being enforced in an unreasonable or discriminatory manner. It is, of course, quite readily to be conceded that, if the enforcement of this ordinance were shown to have been directed at a class of persons for the purpose of suppressing the free expression of their views rather than for the purpose of preventing the littering of the public streets, quite a different question would be presented."

Molds or Fungi Make Fertilizer from Sewage Sludge

By C. G. WIGLEY, M. Am. Soc. C. E.
Consulting Engineer, Atlantic City, N. J.

MOLDS have been and are being successfully used at Atlantic City, N. J., for the purpose of deodorizing and converting solids from sewage into an inoffensive, stable material which has considerable value as a fertilizer.

The molds and mildews, as they are often called, while small in themselves, are, as a class, among the most destructive agents of nature. Of the very many types of molds, only a few are at present utilized by man. Some of the molds of the Penicillium group are used for the ripening and flavoring of cheese, such as Roquefort and Camembert, but the most important regulated use of a mold appears to be in the production of diastase or amylase, by a process discovered and developed by the Japanese chemist Takamine. In this process "Aspergillus oryzae" is grown on wheat bran under regulated conditions of temperature and after forty-eight hours the action has been completed by growth of the mold and development of the enzyme. It is interesting to note that the diastase will convert one hundred times its weight of dry starch into sugar in ten minutes, as an indication of the amount of work performed in a short period of time by one enzyme of a mold.

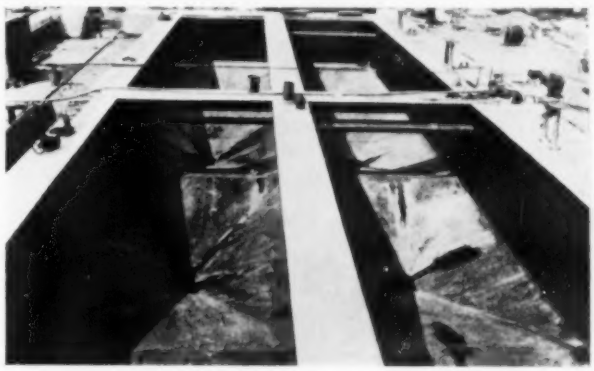
The molds are for the most part saprophytic plants of the fungi group. They are widely disseminated in nature, and are characterized by the absence of chlorophyl, the green coloring matter of plants, but may be colored from substances in the cell walls or plant body. The vegetative part of the plant, or "mycelium," is usually a white cotton-like mass which penetrates into and grows on the source of food for the fungi. The growth and development of the molds is affected by the chemicals in the food supply, moisture, temperature, light, and excretion products. In a general way the best temperature for growth is about 30° Centigrade, but varies with different organisms. Certain types are capable of growing at wide range in temperature. The life cycle of the molds is often very short; often the cycle from spore to spore is completed in twenty-four hours. The time of completion of the life cycle is affected by changes in temperature and other factors influencing growth and development.

By the secretion of enzymes the molds dissolve and break down insoluble organic material and render it available for food for the organisms.

The fungi appear to be important factors in destroying carbohydrates and proteins in the upper layer of soil where air is present. It has been found that fungi are abundant in the upper six inches of soil, but decrease rapidly in numbers below this depth.

Effect on Sludge

In the past the writer was impressed by the speed with which samples of sewage sludge or solids could be deodorized by the development of mold growth, and believed that if these molds could be put to work under proper conditions for growth with large quantities of sewage sludge, they would prove important factors in the work of producing a stable, usable compound.

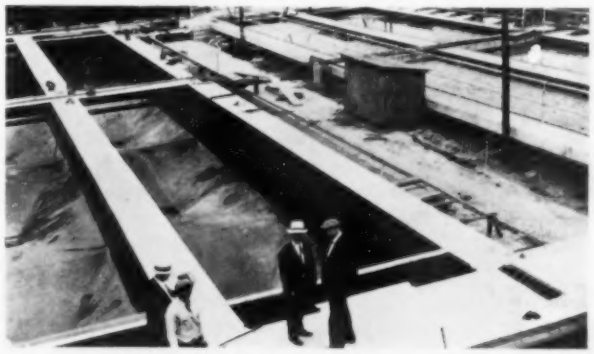


THE SEWAGE SETTLING TANKS AT ATLANTIC CITY, N. J., LOOKING TOWARD THE OUTLET END
The sludge channel and valves are shown at the right

Atlantic City is a summer and winter resort and is situated on one of the sandy islands forming the southeasterly coast line of New Jersey. Its population is at all times considerably augmented by visitors, and while the permanent resident population is about 60,000, it is estimated that the actual number of persons in the city varies from 85,000 in winter to 500,000 on summer holidays.

Sewerage System

The sewage of the city is collected by a separate sanitary sewer system and discharged by gravity to the main pumping station, from which it is pumped through cast iron force mains to the sewage treatment plant situated two miles away on the salt marshes, on the land side of the city. The sewage is all of domestic character, as there are no trade wastes from manufacturing plants, which are not encouraged to locate in the city. The quantity of sew-



A BATTERY OF EMPTY HOPPER BOTTOM SETTLING TANKS AT THE LEFT, AND FULL TANKS AT THE RIGHT

age received at the pumping station is roughly 85 per cent of the whole flow, as because of low elevation some outlying districts discharge sewage into small sewage treatment works a considerable distance from the main sewage plant. The quantity of sewage received at the pumping station varies from eleven million gallons per day in winter to sixteen million gallons per day in summer.

Treatment

The sewage is comparatively in a fresh condition at the time it reaches the sewage treatment works, as it is estimated that the average length of time of travel from source to settling tanks is approximately five to eight hours; this will of course vary at different times of the day and year. The sewage is of average strength, containing from 195 to 220 parts per million of suspended solids. The amount of solids removed from the sewage by the settling tanks on a dry basis, is approximately three tons per day. Only a part of these solids is at the present time treated by the mold process.

The sewage settling tanks are operated by removing the floating solids continually, and the deposited solids on the bottom are removed daily or on alternate days so that the settling compartment remains at nearly full capacity for sedimentation, as solids accumulate in them for only a short period of time before being removed. The solids are run into a narrow concentration tank, from which they are pumped to sludge drying beds, after the comparatively clear liquid between the scum and the sludge has been pumped back to the settling tank inlets.

Sludge Disposal

The sludge beds are not covered, and are for the most part constructed of fine beach sand, therefore the period of time required for drying varies with the weather from ten days to three weeks or longer. At the present time plans are under way for the construction of a covered bed to expedite the drying of the sludge. It is also believed that a mold growth on the sludge while on the covered drying beds can be developed and in this manner also expedite drying.

At the present time, when sludge has been dried to a spadable condition, it is removed and stored on the marsh land adjacent to the sludge beds. The sludge as deposited on the beds varies at the time of removal from eight inches to three inches in depth. This material is densely compacted and it requires a long period of time for molds to grow through such a heavy layer of material. Therefore, after the sludge has been air-dried to about 25 per cent moisture, it is broken up by a grinding machine.

Drying the Sludge

The air drying of sludge is a slow process requiring about ten days' time, and for large plants it would probably be best to depend upon some mechanical drying mechanism. Air drying of the sludge, however, is entirely practical and by cultivating the sludge with a hand plow the drying period can be considerably shortened. For this method drying sheds should be provided, either with or without artificial heating. An interesting experiment was tried in which sunlight was trapped in the building with the direct light baffled, so that in the building itself the light was subdued. In this manner the temperature on clear days in winter could be raised to 80° Fahrenheit, but the heat gained during the day was lost at night, and the temperature dropped so low that the mold growth was affected. With special construction it would be possible to conserve the heat from the sun during the day for use during the night. In winter, at night or on cloudy days, artificial heat would be required to supplement this natural heat, if the process is to be continuous. Possibly some form of automatic oil burner could be advantageously used for this purpose. It is our belief that mechanical driers could be utilized without making the cost of the product excessive.

Another possibility would be to heat the sludge by very hot water on the sludge bed, and dry the sludge in place. This, however, would necessitate the construction of a large area of sludge beds because of the longer drying period before the sludge is removed. The mold growth appears to aid materially in the drying of sludge, as the molds give up considerable moisture during growth.

Handling or Processing the Sludge

As the mold process is utilized at the present time in Atlantic City, the sludge after removal from the beds is air-dried to approximately 25 per cent moisture content. This is accomplished by spreading the sludge under a shed to a depth of eight inches. It is turned once or twice by means of a hand plow during the drying to hasten the process. It is not advisable to dry the sludge to too great an extent, as a certain amount of moisture is required in the food supply for the growth of the molds.

When sludge has been dried to 25 per cent moisture content, it resembles air-dried cow dung, and can be conveniently broken up by a Royer compost mixer into pieces not more than two inches in diameter.

It is necessary to do this in order to expedite the process, as it required too long a time for molds to grow through larger pieces. As the sludge is ground, it is thrown about fifteen feet by the machine and can be conveniently spread on the processing floor or piled in windrows by moving the machine, as it is mounted on wheels.

The compost mixed could be placed stationary and a belt used to distribute the ground sludge. The sludge should later be spread out to a depth of from eight to twelve inches in thickness.

Under proper conditions of light, temperature and moisture, the mold growth is heavy and develops rapidly. Under natural conditions, three to four days are required before the sludge is deodorized and at the same time dried to a considerable extent. It eventually becomes almost bone-dry. Under artificial conditions of heating, the process of mold growth can be completed in thirty-six hours or less. In winter time, under natural conditions, the process takes a much longer time, sometimes three to five weeks or longer. Some of the organisms grow under a very wide range of temperatures.

At different times, varying possibly with the environmental conditions, different types of molds are found. Usually the growth is one which we believe to be Rhizopus nigrans, with spores supported on sporangiophores three inches or more in length. At other times the mold may be disseminated throughout the mass in bright-yellow particles, or as a light-gray mass of mycelium throughout the sludge.

The odors vary somewhat with different organisms. Usually the odor from sludge treated with molds would be characterized as musty or earthy and is much the same as the odor encountered in damp cellars. At other times the

odor of mold-treated sludge will be the same as found in sheep manure. Both of these are not offensive to ordinary persons and do not appear to seriously affect the sale of the material as a fertilizer; in fact, the sheep manure odor seems to aid in selling the fertilizer, as it is characteristic of a widely used fertilizer material. As indicated above, the period of time required for the conversion of sewage sludge to a salable compound varies over wide limits, as changes occur in temperature and light or other conditions affecting the growth and development of molds. In general, our experience has been that the best or optimum temperature is between 80° and 90° F. The best light conditions are from subdued, reflected light to practical darkness. Direct sun rays appear to be injurious, but considerable reflected light may enter the building without serious results. It will be found that molds will grow better on a food supply that is slightly acid, and this would indicate that the fermentation or a partial septicization of the sewage solids would considerably aid the later growth of molds and fungi. In some sewage that is strongly alkaline from industrial wastes, the preliminary decomposition of the sludge to an acid condition will probably be a necessary step in the process for best results.

A representative analysis of the dried sludge obtained in Atlantic City is as follows:

	Per Cent
Total nitrogen	1.96
Available nitrogen	0.76
Phosphoric acid	0.62
Potash	0.13
Organic material	35.9

These figures, it is believed, would be higher if it were not for fine sand which enters the sewer system and which cannot be readily separated from the sludge. As the sand is an inert material, it consequently reduces the percentage of valuable constituents. In general, the organic portion of dry sludge from separate sewer systems is 50 per cent, or more.

Fertilizing Value

Agriculturists who have used the sludge as fertilizer have on several occasions noticed that its fertilizing value is considerably greater than is indicated by the chemical analysis. This fact is borne out also by research work carried on by Lippman and Burgess at the University of California. Their general conclusion was that chemical analyses were of little value as an indication of the fertilizing value of sludge nitrogen. Moreover, the sludge is of the greatest value as it adds cheap organic material and nitrogen of a high degree of availability to "humus poor" soils. Also they found that the absolute amount of nitrates produced from sludge nitrogen are often 50 to 75 per cent as high as those produced from the same weight of dried blood or high-grade tankage.

Whether this is due to activity of nitrogen-fixing fungi or bacteria, it is difficult to determine. However, the fact is indicated by them that if sludge can be dried and ground, it will have great value as a fertilizer, as shown by their experiments.

It is interesting to note in this connection that sewage sludge which has been deposited and buried in large masses will often remain for a year or more in a very offensive condition.

In Atlantic City the mold-processed sewage sludge is sold at $20 a ton without difficulty, and repeat orders are the rule. This price is probably higher than would be required at inland plants, as at the present time the handling charges are very high, since the material must be moved by hand labor; and as the treatment works are on an island, the finished product must be lightered to a highway about a quarter of a mile away.

In order to prevent the abuse, misuse or improper exploitation of the process, letters patent have been obtained by the writer covering this process.

For much of the information relating to molds as given above, the writer is indebted to a recent book entitled "Microbiology," by Benamin F. Lutman, who says (page 102): "The bacteria have received so much attention from their work in the soil that they have overshadowed the importance of the fungi as active agents in inducing changes in the organic and inorganic substances which may be added to the soil as fertilizers . . . ."

After a year and more of practical application of the process, it is our belief that by the use of molds and fungi, with proper mechanical equipment for the economical handling of material, a method is available to sewage works operators by means of which a valuable by-product may be obtained at a profit, and that it is possible by this means to return to the soil a considerable proportion of the fertilizing elements in sewage which have heretofore been wasted or lost.

A New Principle for Limiting Building Bulk in Areas of Intensive Development

THE problem of whether to limit height or bulk of buildings, and how, in order to prevent wasteful, unwholesome and even dangerous congestion, is getting attention from many city planners, especially in cities where intensity of building is considered most justifiable.

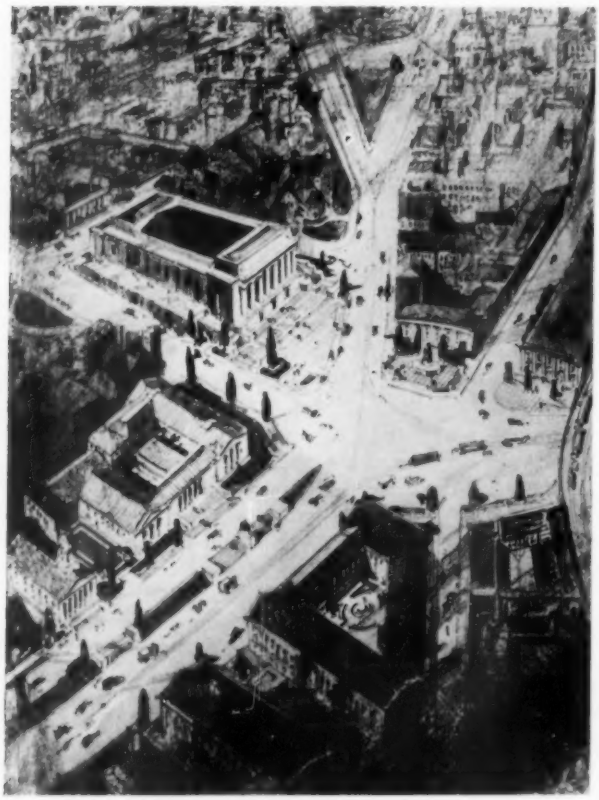
Frederick Law Olmsted, eminent city-planning authority, puts forward a new principle for this purpose in a brief article in the January quarterly issue of *City Planning*. He states that as much flexibility of design for given plots and blocks should be allowed as is consistent with the desired aims—namely, that light and air should be sufficient and transportation facilities not overtaxed. No absolute limitation of height is considered necessary. In view of the tendency of owners of large buildings to purchase "air rights" over surrounding property he suggests "that the area of any parcel of land which may be occupied by buildings at any given height above the street level be made to relate not merely to the size and shape of the parcel of land in one ownership on which the building is erected and to the width of the adjoining street (considered as a permanent open space extending upward indefinitely from the street level), but also to the size, shape, and location in relation to the building of any other adjoining spaces permanently restricted against occupation by building at or above any given level, regardless of the ownership of the land under such spaces. . . .

"Under such a system landowners who did not value highly the right to build at the higher levels to the average maximum fixed by law for all, would for a moderate compensation waive those rights permanently in favor of increasing the bulk of building which could legally be erected at the higher levels on adjoining property whose owners valued those rights more highly and would pay for the increase."

Considering the Street Picture

A Responsibility Too Long Neglected by Architects and Civic Improvement Bodies

By **HARRY B. BRAINERD, A.I.A.**



ARCHITECT'S SKETCH, VISUALIZING THE SETTING OF WORCESTER'S NEW AUDITORIUM

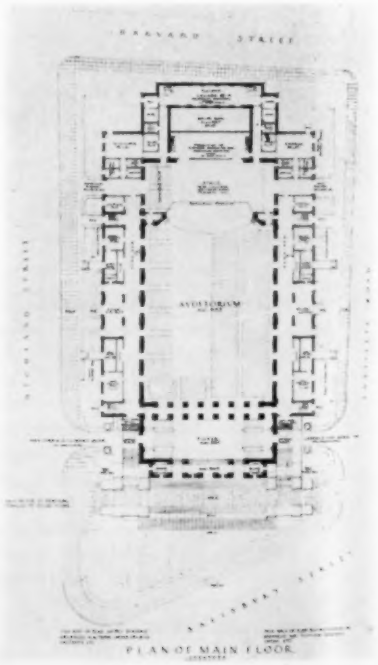
THE architectural design of our streets is the most neglected form of civic art in America. It would be more accurate to say that streets have no coordinated architectural design. The majority show that architects have not been expected to pay attention to the street picture—to the effect upon the eye of a group of buildings or the vista of a street. The failure to design the elevation of streets even after the city planner has provided a street system susceptible of attractive architectural development naturally results in a chaos of materials, colors, styles, silhouettes and scales, generally worse confounded by heterogeneous street furniture, miscellaneous paving and sidewalks (not to mention their degree of cleanliness or congestion) and private property displayed ad libitum—in spite of the fact that this condition of affairs could be rectified by attention and cooperative effort.

Much interest is being shown by chambers of commerce and some street and improvement associations in annual building awards competitions for the best-designed building erected during the year or completed during a stated period of time. Judging from the reports of some of the juries of award, many fail to think of the street as a unit of design in which the individual structure is but an element. They have been dealing with results rather than with causes, and have been achieving but limited improvement in spite of their work. Evidence of this is found in the press and in the reports of a few architectural juries.

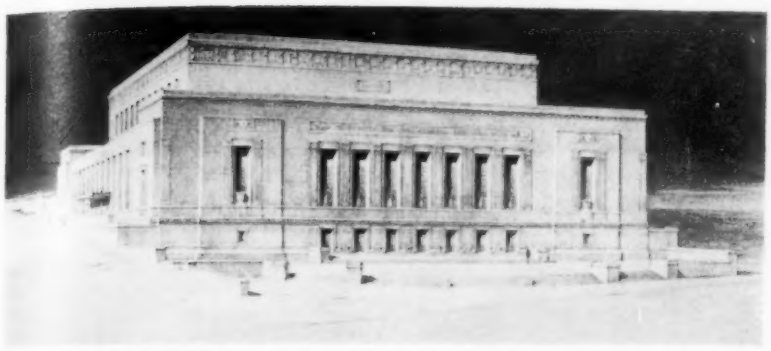
As recently as October 15, 1930, the New York *Herald Tribune* said editorially, "Even today the architects seem to build each structure as if it stood alone in a desert, without reference to its neighbors." This recognizes common failure hertofore to think of the street as a unit of design. If, in the course of time, every building in the street were a prize winner, the ensemble would not necessarily look well unless serious effort had been made and imagination used at every stage of its development to pro-

PERSPECTIVE AND FLOOR PLAN OF WINNING DESIGN IN THE WORCESTER MUNICIPAL MEMORIAL COMPETITION

By Lucius W. Briggs, of Worcester, associated with Frederic C. Hirons, of New York



PLAN OF MAIN FLOOR



PERSPECTIVE OF DESIGN PLACED SECOND
Submitted by J. D. Leland Company of Boston and Worcester

duce a beautiful design consistent with practical requirements.

During the fall of 1930 the city of Worcester, Mass., held an architectural competition for the design of a Memorial Auditorium. The Jury of Award consisted of Charles D. Maginnis, F.A.I.A., F. Ellis Jackson, F.A.I.A., J. Frederick Larson, A.I.A., George F. Booth, Publisher, *Worcester Telegram-Gazette*, George N. Jeppson, Trustee, Worcester Art Museum. On November 20 this Jury reported, partly as follows, indicating that it had considered the street picture:

"Beyond any designs submitted [in this competition] the one awarded first prize takes account of the physical conditions of the neighborhood, particularly of the presence of the Boys' Club, which, from many viewpoints in Lincoln Square, obscures a considerable portion of the Auditorium site. The Jury, it should be stated, was much impressed by the importance of this consideration in determining the availability of a competitive scheme. In the design presented, the architectural interest of the façade is confined to such limit of width as to be independent of this intrusion. The plan, moreover, is skillfully contrived to make for attractive appearance to the approach from the north and south. . . .

"The Jury ventures to suggest to the Commission [conducting the competition] that so important a condition to the dignified architecture of this neighborhood as the construction of this Auditorium would seem to demand a study of the lines of Lincoln Square, which at present is so formless and unattractive. It is also impressed by the necessity of reconsidering the situation of the proposed War Monument [by a previous competition] with the view of bringing it into a responsible and symbolic relation to the new Auditorium."

In 1924 the City Planning Board of Worcester had prepared a comprehensive plan for the city that included studies of sites for a municipal auditorium in order to indicate the effect such a structure would have on the appearance of the central part of the city. A building of 6,000 to 10,000 seating capacity facing the Common was recommended. The site chosen for the subject of the competition mentioned above was shown as one of three focal points in a triangular civic center scheme and was suggested as suitable for a smaller auditorium to complete the development of Lincoln Square. The designs illustrating this report provide for 4,000 seats. The creation of a circle to improve the lines of this important intersection of streets was also indicated, but the opportunity was lost when the Boys' Club was erected. The lament of the Jury quoted above and the designs for Lincoln Square pursuant to its recommendations, published in the *Worcester Telegram-Gazette* January 25, 1931, show the Square as it will appear with the contemplated auditorium under existing environmental conditions. These indicate clearly the difficulties predicated by the City Planning Board and the fact that that Board should have had more than advisory powers.

Subsequent to the erection of the Boy's Club and before the competition was decided upon, many of the local architects made studies of Lincoln Square to discover what could be done to make the most of a very difficult problem. All the local architects who chose to compete were admitted to the competition. Others from Boston and New York were invited. Eighteen submitted designs, and it may be said that to an unusual degree in this case the street picture was considered, even though competitors were not permitted to show surrounding structures in their final drawings. Doubtless, similar cases of cities ignoring the recommendations of the city planners and architects could be cited, but there are reasons for hoping for better public support of well-conceived public improvement projects in the future.

Reason for confidence that street design will be practiced in the future may be found in the important recognition given to this subject by the New York City Board of Education in its recent syllabus on "Art Appreciation" now in use in the high schools. The next generation of high school graduates at least should be well informed as to the possibilities and necessity of controlling the appearance of its streets.

Meanwhile the American Institute of Architects has invited all of its chapters to emulate the notably successful efforts of the Washington chapter in its voluntary review of all new plans in advance of construction.* Obviously, however, if our streets are to have any design, architectural studies of their appearance as a whole must be prepared as a guide to the desired result.

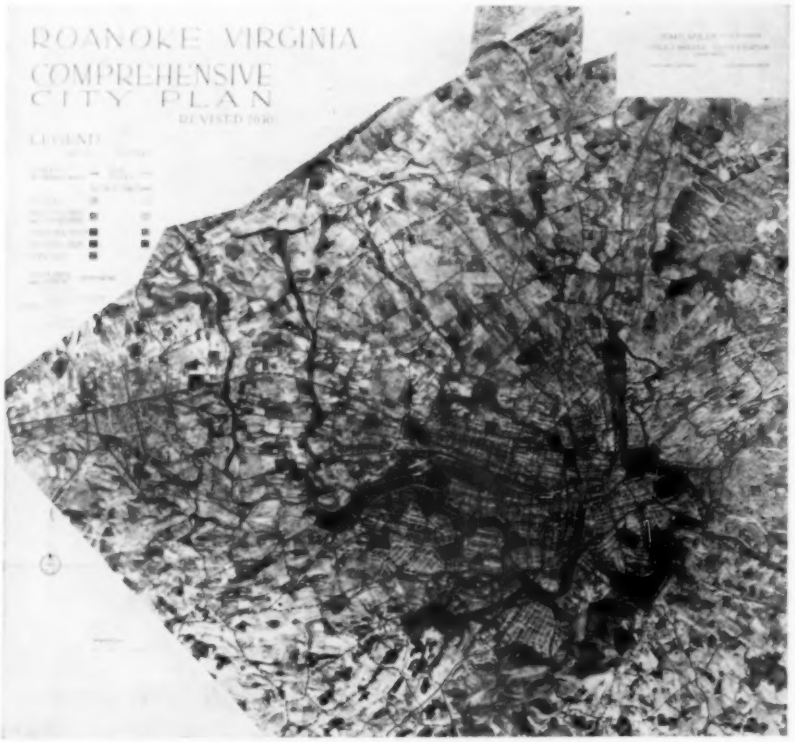
An apparently feasible method of accomplishing this has been advanced by the author in connection with the rehabilitation of New York's East Side, in reports to the East Side Chamber of Commerce. His pamphlet on "Controlling the Appearance of New and Widened Streets" suggests coordinated architectural design of public and private buildings *en masse* as a guide to determine what zoning restrictions had best be adopted, and the imposition of restrictions by the municipality in the resale of land taken by excess condemnation under the laws of the state of New York. In the nomination of a committee of advisory architects from which street or block associations could select, the cooperation of the Municipal Art Commission and the City Plan Commission could be invoked. A brief article on the above pamphlets was published in THE AMERICAN CITY for October, 1929, page 181. The suggestions made in the original reports cited above are of general applicability, particularly where traffic requires new or widened streets.

* See "Architectural Advisory Councils," by Horace W. Peaslee, in *The Octagon*, January, 1931.

EDITORIAL NOTE.—The program for the Worcester Memorial Auditorium Competition failed to suggest that special facilities for automobile parking should be provided on the property, and so limited the cubage that it could not be included in the competition designs. In the sketches hurriedly prepared subsequently and published herewith to show the relationship of the winning design to its surroundings in Lincoln Square, no particular provision for traffic control at this important street intersection is shown. It is to be hoped that further study will disclose a method of handling these important matters.

Projects and Performance

In Pictures and Paragraphs



Fairchild Aerial Surveys, Inc.

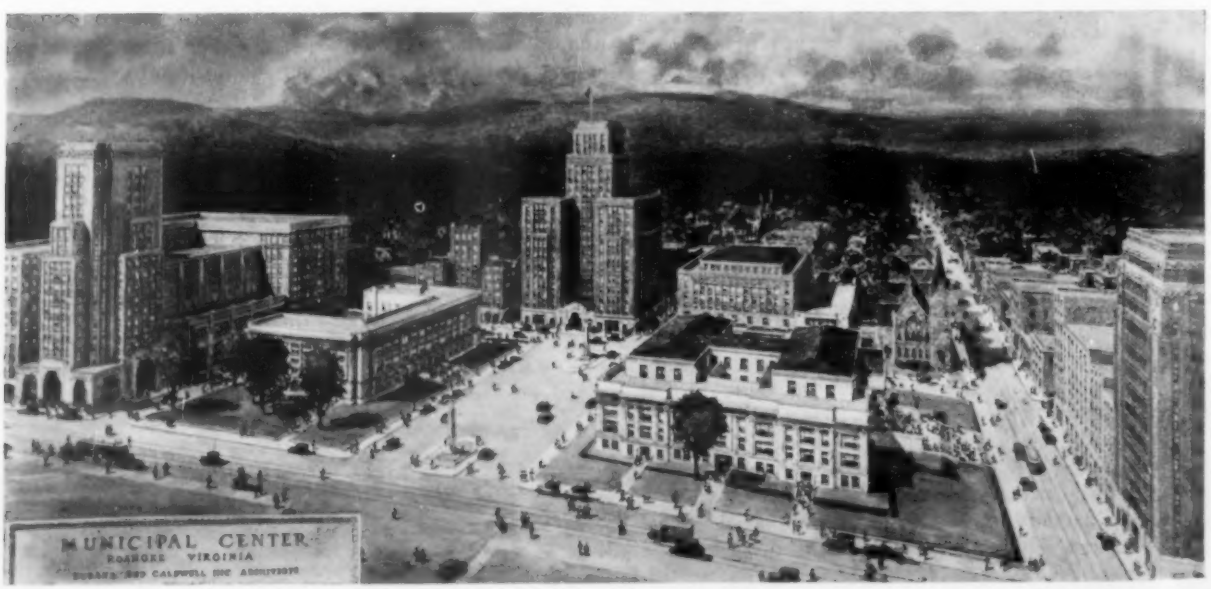
CITY PLANNING PROJECTS IN ROANOKE

At the left is an aerial map of the city upon which the Comprehensive City Plan is superimposed, showing proposals for streets, schools, parks and parkways, industrial areas, etc. The map is to be exhibited at the Congress of the International Federation for Housing and Town Planning at Berlin in June

The large built-up section is the city of Roanoke, the small community to the left is the town of Salem, and adjoining the city of Roanoke is the town of Vinton

ROANOKE'S FUTURE MUNICIPAL CENTER

This is the work of a local architectural firm, Eubank and Caldwell, Inc., and Hughson Hawley, of New York, and is based on the Comprehensive City Plan. The low building to the left of the center is the Federal Building, now under construction. The low building at the right is the Municipal Building, now half completed. With the exception of the church, the other structures are only proposed or suggested



WHEN BERLINERS MOVE TO THE SUBURBS

—even if they are payers of modest rentals, they may find apartments in some one of the *siedelungen*, or new residential districts, where modern land planning, modern architecture, and due regard for the amenities are combined to make living more pleasant and attractive.

Photographs from German Tourist Information Office

The two views above show apartments of the *siedelung* recently developed in Britz, a part of Greater Berlin. Note the safety street planning, the balcony to every apartment, and the gardens.

The view to the left shows apartments in Fischtal, a new colony in the Berlin suburb of Zehlendorf. The trees were preserved from the recently cleared forest which provided the site.

Photographs from Heinrich Homberger

VIEWS OF SAN FRANCISCO'S NOTABLE BOULEVARD SYSTEM

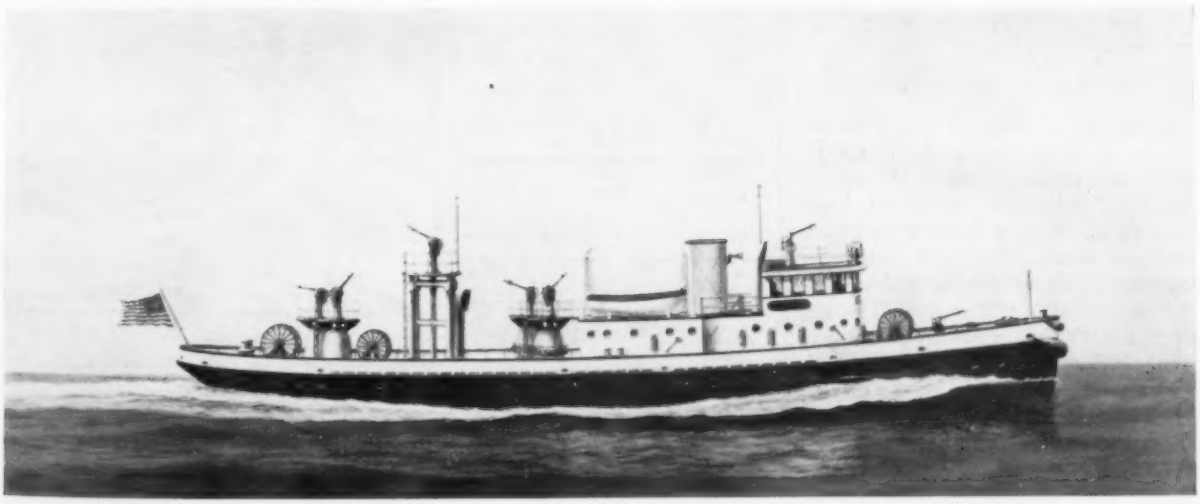
M. M. O'Shaughnessy, City Engineer of San Francisco since 1912, began as early as 1913 to plan a complete boulevard system for the city—a system which is today completed in many of its details. It has been planned in three parts—a peripheral system, a north-south main artery, and a northeast-southwest diagonal artery.

The view above shows a recently-completed section of the Great Highway. At the left is shown the entrance into an underpass or pedestrian subway, under Great Highway, leading to the Esplanade. Below is the new Bernal Avenue development, the new Richland and Highland Avenue bridges and stairways

FIRE-FIGHTING APPARATUS AT HOME AND AFLOAT

DEPARTMENT CALLED IN TO FIGHT PNEUMONIA

Volunteer firemen of Arnold, Pa., offered their services and that of an H-H inhalator, part of their protective equipment, in a fight for the lives of these twins after physicians had found oxygen tanks useless in their efforts to combat pneumonia. Relief was almost immediate, and at the end of two days' vigil the children were out of danger



THE WORLD'S MOST POWERFUL FIREBOAT

It is about to be built at Todd Shipyard, and will have about 60 per cent more capacity than any other fireboat in the world. It is believed that it will also be the fastest large boat of its kind. Henry J. Gielow, Inc., New York City, naval architects, are the designers. Several of the city's fire officials have interested themselves in the design and have contributed their ideas to its development. Generators are being supplied by the Westinghouse Electric & Manufacturing Co., pumps by Lecourtenay Co.

The capacity of the boat is to be 16,000 gallons per minute at 150 pounds of pressure. Five 8-cylinder Sterling-Viking engines will deliver a total of 2,810 hp. to the propellers when the boat is en route to a fire. On arrival at the fire 1,800 hp. is made available for pumping, leaving 1,010 hp. that can still be used for propulsion. This is greater than the total power now installed in the "Mitchel," large fireboat now in the city's service.

Winning a Hard-Fought Bond Issue

By CHARLES G. SAUERS

General Superintendent, Cook County Forest Preserve District, Illinois

TALK to the people in their own language. Call the old proverbial spade by its right name. Remember the average person thinks and acts differently from what was the case even a short decade ago. Minds have broadened, and with this change a more liberal procedure is in order.

We considered all these things in our second fight to "put across" a $2,500,000 bond issue for the general improvement of the Forest Preserve District of Cook County, and on November 4, last year, turned into a smashing victory what only the year before had been an unhappy defeat.

In liberalizing our general methods of campaigning we carried the idea even to the drawings and art work that featured our general advertising and publicity. Without a degree of hesitancy we presented the crude, old fashioned outhouse alongside the modern comfort station that would replace it "when the bond issue won." And not once, even from the most remote source, did there come the slightest hint that we were in bad taste.

The Terrain of the Battle

Some comment on the Forest Preserve District of Cook County should not be considered amiss in order to portray roughly the background of the bond issue fight. It is a domain of native trees and verdure that will eventually contain 35,000 acres—all within one-half hour of 4,000,000 people. To date, all but 2,000 acres of this total has been obtained. It is the playground, not only of the residents of the city of Chicago, which it flanks on all sides except the lake front, but of the whole of Cook County. In addition, it is the mecca annually of several million visitors from far and wide throughout the United States and Canada. It is the most vast natural recreational area in immediate proximity to any outstanding American city.

Despite the importance of the Forest Preserve District to present-day Chicago and to posterity, there never had been available any funds for the proper development of this huge recreational domain—especially lacking from the viewpoint of sanitation and shelter.

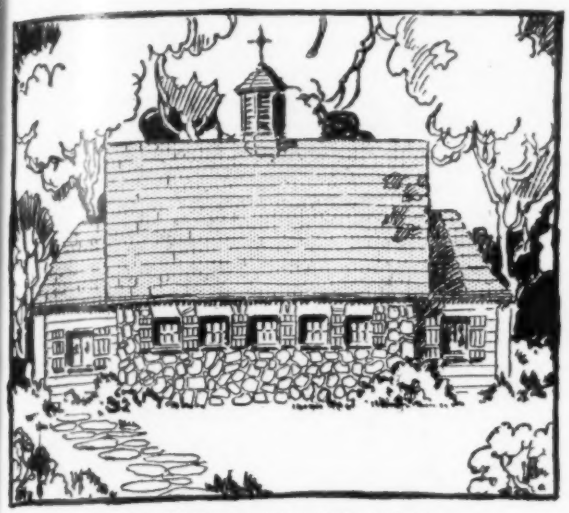
In connection with a judicial election in the fall of 1929, a Forest Preserve bond issue for $2,500,000 was presented to the electorate of Cook County and was defeated. It fared best, however, of the several bond issues on the ballot in that election.

The Forest Preserve Board, of which A. J. Cermak, now a candidate for Mayor of Chicago, is President, was confronted with the dire necessity of obtaining funds and de-

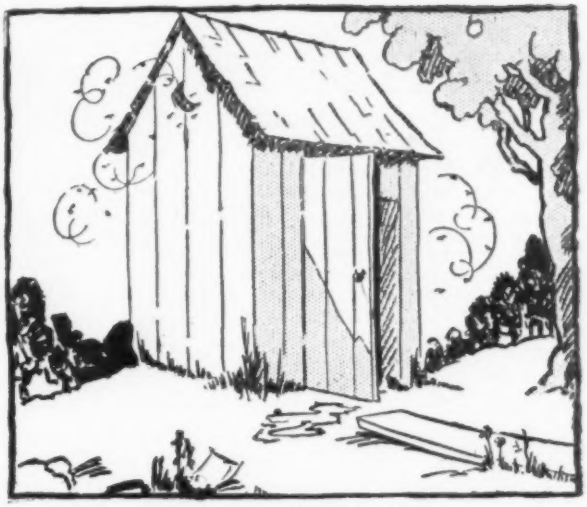
VOTE "YES" ON THE FOREST PRESERVE BOND ISSUE NOV. 4th
Do You Want Modern Shelters
THE millions who visit the Cook County Forest Preserves each year are entitled to all of the conveniences and comforts that can be given them from the funds available.
Many improvements have been made from savings brought about by economical and efficient administration of Forest Preserve Departments.
Only by the approval of the Bond Issue on the Ballot November 4th can a general program of improving the Forest Preserves generally be brought about.
There is no project that can do more for the general public than this —insuring health, comfort, and convenience to more than ten million visitors annually.
TEN REASONS WHY:
1. Health must be protected by modern sanitary facilities.
2. Pure water must be supplied throughout the district.
3. Shelter Houses must be constructed for protection in bad weather.
4. Swamp lands must be drained to prevent Mosquito breeding.
5. Parking spaces must be constructed to prevent damage to automobiles and busses.
6. Control of water conditions and sand beaches must be provided to protect the lives and health of men, women and children.
7. More picnic areas with adequate tables and facilities must be developed.
8. Playfields must be graded, drained, and constructed.
9. Disease epidemics must be prevented.
10. Make the 32,000 Acres healthy and safe for all.
Or Is This Satisfactory?
Sponsored by Cook County Forest Preserve Advisory Committee.
Abel Davis, Chairman
Fred W. Brummel Edward E. Brown
Daniel H. Burnham Rufus C. Dawes
William S. Elliott
John C. Lewe John T. McCutcheon
Anton J. Cermak, President
Cook County Forest Preserve Commission
The Forest Preserve Bond Issue has been approved by the Chicago Association of Commerce, Chicago Regional Planning Association, the Civic Federation, Chicago Plan Commission, Conservation Council of Illinois, and the Prairie Club.
FOR THE HEALTH AND SAFETY OF COOK COUNTY

ONE OF THE VOTE-WINNING ADVERTISEMENTS

The sketches and captions on the next page were used in two other advertisements of the series



DO YOU WANT MODERN COMFORT?



OR IS THIS SATISFACTORY?

cided to take the issue again to the people in the election last November. And this in the face of a growing public opposition to bond issues in general, accentuated by the widespread economic depression over the country and a tax muddle here at home due to a reassessment, which held up the flow of money into county channels.

Aid from Suburban and Metropolitan Newspapers

We knew the fight before us and entered it with the vim and vigor of zealots who realized it was a condition of do or die. Now it so happens that Chicago and Cook County have an unusually large community and suburban press wielding considerably more influence than is generally suspected of such publications.

Because the Forest Preserve flanks Chicago on its three landed sides, forming, in fact, its suburbs, and touches virtually every nook and crevice in Cook County, we took our proposition directly to the people through these little but vigorous newspapers. We designed our advertising, art and news stories in such a manner as to make them of definite local value to the readers in the immediate communities separately served by these varied and numerous publications.

It should be pointed out here that while the public was in a hostile frame of mind to bond issues generally, we had the favorable attitude of the press as a whole, including the big metropolitan dailies of Chicago, and received splendid space, considering the competitive propositions on the ballot.

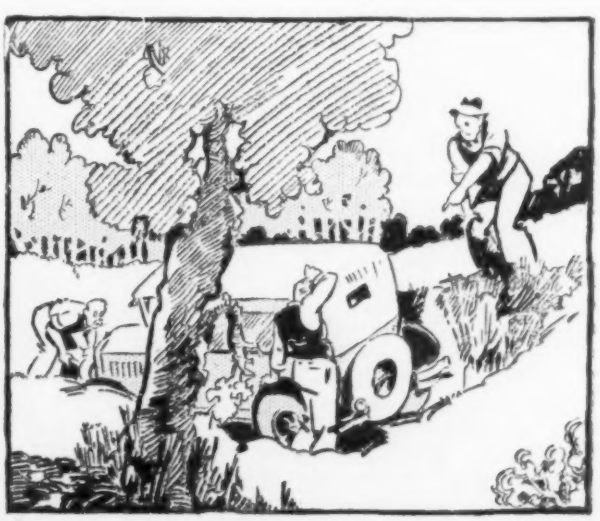
The friendliness of the newspapers was fortunate, as the funds at our disposal for the campaign were exceptionally limited and it was only by their judicious use that we were able to make ends meet.

Facilities for Motorists

The sad absence of proper sanitary facilities and adequate shelter accommodations in the domains of the Forest Preserves has already been mentioned. It should be added, however, that another most vexing problem was the control of the automobile and its proper care while in the confines of the District.

The remedy for all of this was provided in the general Forest Preserve plan, recommended after several years of study by the Advisory Committee, a group of outstanding Chicago bankers, industrialists and civic leaders, headed by Gen. Abel Davis, as chairman. This committee had

DO YOU WANT MODERN PARKING FACILITIES?



OR IS THIS SATISFACTORY?

HOW TO EXPEDITE RELIEF FOR THE UNEMPLOYED

NOW, WHILE MATERIALS ARE CHEAP AND LABOR IS PLENTIFUL, THIS IS A SURE WAY TO STIMULATE CONSTRUCTION, HASTEN BUSINESS RECOVERY, HELP RELIEVE THE UNEMPLOYED AND PUT MONEY IN CIRCULATION
LOCAL BOND ISSUES
CITY, COUNTY, FOREST PRESERVE, AND LINCOLN PARK BOND PROPOSALS
FOR
AGAINST
McCUTCHEON

(X marks spot where expediting is done.)

THIS McCUTCHEON CARTOON IN THE CHICAGO TRIBUNE HELPED A LOT

been appointed by Mr. Cermak and his co-commissioners on the Forest Preserve Board. The $2,500,000 bond issue was to provide the funds for carrying out the plan of this group.

To stress the need of the improvements sought in the election campaign, we arranged for original "before and after" sketches designed for the territory concerned, and with this special art work tied up with ads and news stories, we centralized our arguments for the passage of the bond issue in the neighborhood newspapers. This was augmented by the use of colorful display cards in the surface cars and on the "L" the week immediately preceding the election.

In addition to this forceful advertising, we were favored with the appearance in the *Chicago Tribune* of the powerful first-page cartoon by the internationally famous McCutcheon (see accompanying reproduction).

Leadership and Endorsements

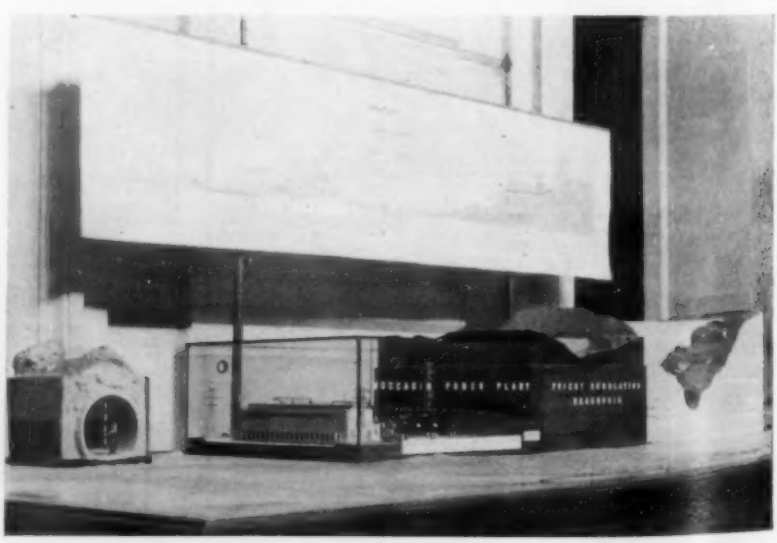
For the victory that followed, too much credit cannot be given President Cermak and his fellow Commissioners. Despite the heavy demands made upon their time by the stress of general business and the fact they were again up for re-election, their personal aid and cooperation were extended throughout the campaign. It was through them that the bond issue received the party support, and also the approval of the Chicago Association of Commerce, the Chicago Regional Planning Association, the Civic Federation, the Chicago Plan Commission, the Conservation Council of Illinois, and the Prairie Club.

Back of the entire project was the ever helpful hand of the Advisory Committee. With this team work, it is no wonder we overcame a hostile public and won the bond issue in the worst year ever to confront Cook County and the nation.

City Maintains Exhibit Featuring Great Public Enterprise

IN the City Hall of San Francisco, Calif., mounted on a large table, is a model representing the Hetch Hetchy water and power project owned and operated by the city and located in a distant mountain valley. The model includes a reproduction of the Hetch Hetchy Dam, the Moccasin Creek power plant, the Priest regulating reservoir and a section of the aqueduct that carries water to San Francisco, where the city recently acquired the distribution system of the Spring Valley Water Co., the private corporation then serving the city.

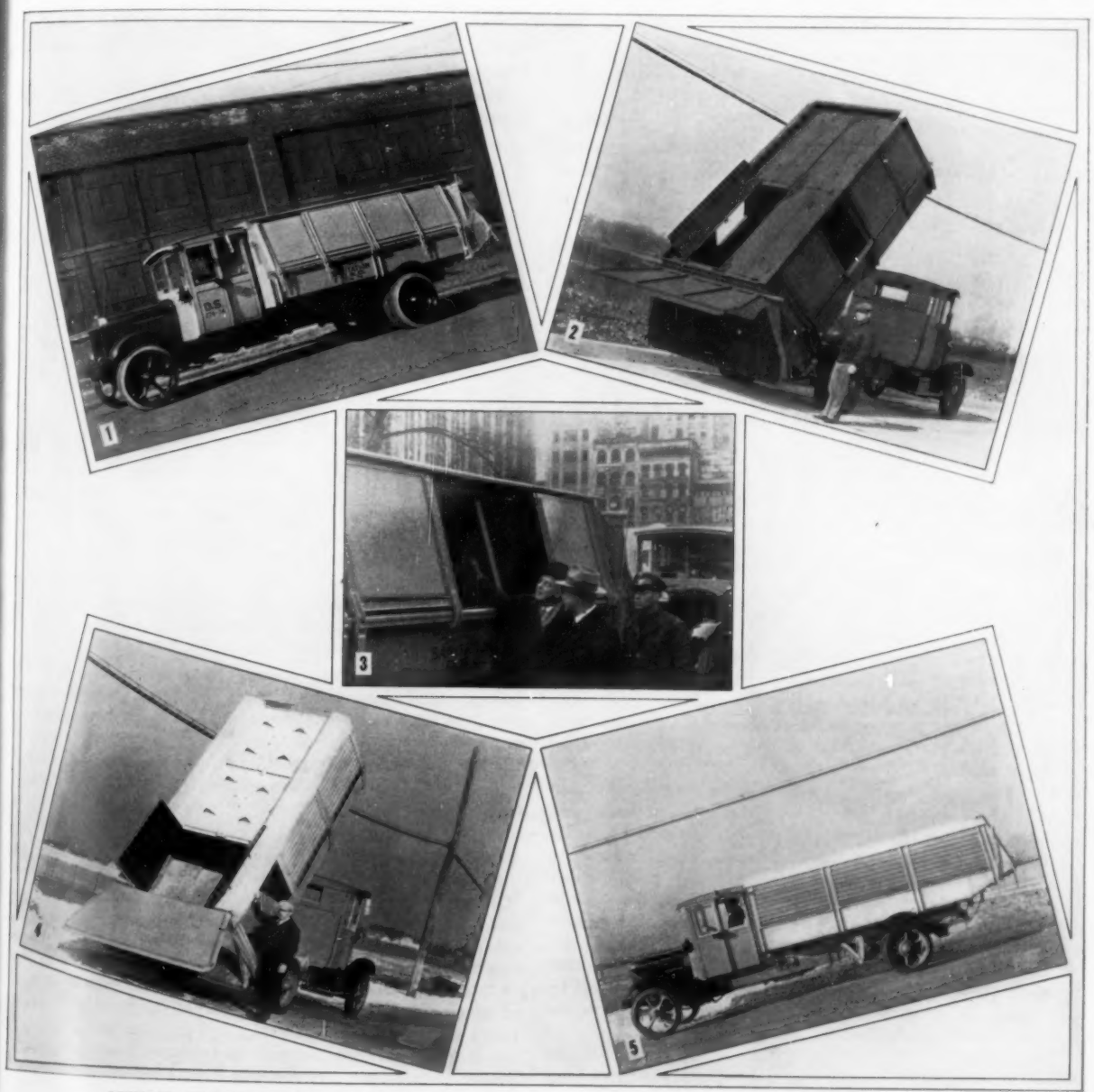
A lecturer gives interesting talks about the undertaking from time to time, his hearers gathering about the model for demonstration. Citizens and visitors thus become acquainted with this outstanding municipal enterprise, one of the largest of its kind.



Advances in Street-Cleaning Equipment in New York City

FOR nearly two years engineers of the Street Cleaning Division of the Department of Sanitation, New York City, have been working on the specifications for a new type of ash and garbage removal truck designed to eliminate the nuisance of dust attendant on the old method of open-body collection. The result of their extensive and thorough research was the recent purchase by the city of New York of 204 new chassis equipped with two different types of special bodies.

The specifications developed by the Division engineers are believed to be the most exacting ever set up as a basis for selecting motor-truck equipment. They establish a high standard of what a really good truck should be. Since the law requires New York authorities to receive bids from at least three responsible concerns, their specifications cannot set up standards that are peculiar or exceptional. All of the chassis on this order, representing an expenditure of nearly one million dollars, are the



TYPICAL TRUCKS OF THE NEW FLEET FOR THE STREET CLEANING DIVISION, DEPARTMENT OF SANITATION, NEW YORK CITY

1. An Autocar truck with Wood hydraulic hoist body in normal position, showing panels, covers and tailgate closed. 2 The same 12-yard truck, showing loading doors open and tailgate open for dumping. 3. Commissioner Schroeder showing Acting Mayor Kerrigan how the doors of the truck open. 4. One of the trucks with a 16-yard Fitz Gibbon & Crisp body and rotary hoist, in position for dumping. 5. The truck body completely enclosed to prevent ashes and refuse from scattering in the street

model SCHSB Autocar chassis. The bodies are of two types, one made by Wood Hydraulic Hoist & Body Co., of Detroit, and the other by Fitz Gibbon & Crisp, of Trenton, N. J., the order being equally divided.

The bodies supplied by Wood Hydraulic Hoist & Body Co. have a capacity of 12 cubic yards and are elevated by mechanical hoists. The side panels slide horizontally on rollers. They are hand-operated by means of handles and pawls which are provided for each panel. Two of the sliding panels can be opened on each side of a truck at the same time. These openings are used in the normal work of collecting ashes and rubbish. The action of the tail-gate is controlled from the driver's seat. The bodies are also equipped with top panels for use in connection with snow removal.

The Fitz Gibbon & Crisp bodies are all-metal and have a 16-yard capacity and are equipped with a rotary hoist. On these bodies the side panels are balanced by springs and roll up like the top of a desk. All the side panel openings can be opened at the same time. The tail-gate mechanism is controlled from the driver's seat. The top panels or doors open on hinges by means of individual handles. These doors are used only in connection with the operation of the unit and with snow-removal trucks.

When the first shipment of twenty of these trucks was received in New York, appropriate ceremonies attended their dedication. Together with some of the old horse-drawn vehicles, the new trucks were publicly displayed in front of City Hall, while the Sanitation Department band played "The Old Gray Mare, She Ain't What She Used to Be."

Several of the trucks are painted in the city's official colors—white bodies with orange trim and blue running gear. If this proves to be as serviceable as the old tan and black paint, the color scheme will be carried out on all the new trucks.

Commenting on this improvement in an important department of New York's municipal government, an editorial in *The New York Times* says in part:

"The event was certainly more deserving of celebration than many public functions staged in City Hall Park, when measured by permanent gains for the health and self-respect of the people of New York and the beauty of their city. . . . We may look forward to the eventual disappearance of that most extraordinary sight in a great metropolis—refuse wagons open to the air and distributing their contents of litter and ashes with a fine impartiality over select residential districts and tenement streets."

The Fifth Avenue Association, which has heartily endorsed the new type of trucks, is urging the Department of Sanitation to make it mandatory that private collectors, who remove much of the waste paper from New York's business houses, use a similar type of truck. With a municipal department protecting the cleanliness of its streets with proper equipment, private collectors should be required to take the same precautions or else the value of the municipal trucks will be largely nullified.

Road Building, Red Tape and Emergency Relief

To the Editor of THE AMERICAN CITY:

Hundreds of millions of dollars of additional funds can be made available for emergency road building in the United States as a relief measure for unemployed men, if officials will cut red tape and take emergency action.

This applies not only to Federal aid roads, but more specifically to that field of road construction in which the Federal Government is not financially active. While the Federal Government has resources and facilities far exceeding those of any of its political subdivisions, and the aid of the Government in speeding up public works is a most powerful influence to relieve unemployment, there remains a vast amount of street and highway work that is only indirectly stimulated by national action.

Where road funds are not available for city, county, and state projects, it would be practicable for the authorities to arrange for the construction of roads on deferred payments to the contractors. The plan to anticipate future revenues to finance immediate road building is practiced in a number of states. It was resorted to in Cuba, where the Central Highway, now practically completed, was built by bonds issued against future gasoline and other taxes. Thus the highway which has been so largely built by anticipating future revenues from the gasoline tax, will help to pay for itself by increasing the consumption of gasoline resulting from the increased traffic throughout the length of the island.

There is not a city, county, or state in the United States where the opposition cannot find precedents against taking quick action in a road-building program which would disturb their routine. But in time of emergency the authorities with backbone can find various ways to overcome technicalities.

As to the red tape that must be sliced, every situation is different, and it is the duty of officials in each community to find ways to surmount the difficulties so that the work may proceed. Where apparently impassable legal obstacles to immediate action are thought to exist, officials will find that under the present needs of several communities, legislatures will quickly pass the required enabling acts. Almost unlimited credit can be extended by the states, counties, and cities for road construction. Now is the time to release that credit. The roads built as a result will be a paying proposition for the community.

There is probably no other activity in which so great a percentage of the investment goes to labor as road construction. There are no automatic machines on the highways; every machine demands labor. Road construction is one of the best means of using local labor, and as most of the labor is unskilled, it prevents such people from going to the cities to augment the unemployed already flocking there.

If the activities of the country in road building were advanced only four months, possibly $500,000,000 would be liberated for useful employment throughout the United States. It is important that counties and states should adopt immediate road emergency work to back up the emergency road construction the Federal Government is promulgating. Increased municipal action is essential also. There is no city in the United States that does not have some streets in need of repair. In most instances it should be possible to begin active work within a few weeks.

But to do this, city, county and state officials, engineers, county commissions, city councils, legislative bodies and other authorities, executive and financial, must cut red tape. We are at war, at war against unemployment, and emergency measures corresponding to those of war time are justified.

CHARLES R. GOW.

Boston, Mass., February 6, 1931.

Roads vs. Shuttles

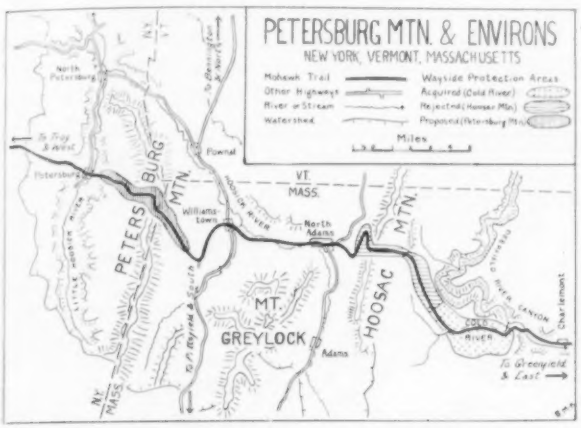
The Lesson of the Mohawk Trail on Hoosac Mountain

By **BENTON MACKAYE**
Vice-Chairman, Regional Planning Association of America

"BUILD roads and save breadlines!" A good slogan. We should provide jobs for producers—but also real roads for "consumers."

Real roads and not "shuttles"!

How to do this—and how not to do this—we can learn from the Hoosac Mountain Highway, a section of the Mohawk Trail in Berkshire County, Massachusetts.



WHERE THE MOHAWK TRAIL CROSSES TWO MOUNTAINS

Petersburg Mountain on the west, Hoosac Mountain on the east

Every highway has two functions:

1. To provide transport—the purely physical part.

2. To provide well-being during transport—which is mental as well as physical.

A *road* fulfills both functions; a "*shuttle*" fulfills the first only.

The Hoosac Mountain Highway is part road, part shuttle. To show how this has happened we must go back twenty years.

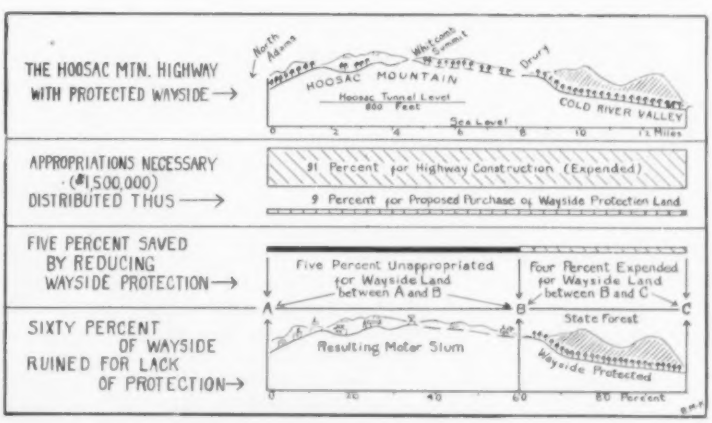
A Bit of Highway History

In 1911 the Legislature appropriated a sum to lay out a motor road over the picturesque mountain of tunnel fame. It was voted later to built this road, and on Labor Day, 1914, it was opened to motor travel, making one of the most all-round scenic stretches of highway in Massachusetts and in our eastern country. Going west from Charlemont, the way leads up through the gorge of Cold River; it skirts the high slope overlooking (north and eastward) the Deerfield River Canyon; it crosses the plateau with its encircling fringe of high hills, and finally descends the steep west slope with its outlook toward Greylock, the Taconics, and the sea of distant mountains north and south. No poet being handy to describe this display, the phrase of an Adirondack lumberjack suffices for it—"Quite a scenery!"

How long it might stay such began to be questioned. So in 1915 Harris A. Reynolds, Secretary of the Massachusetts Forestry Association, and other far-seeing souls, proposed the purchase of a belt of land along the road ("parkway" we now should call it). This to rid the foreground (and hence protect the background) from man-made embellishment. The scheme later went through (in part). In 1921 the Cold River Gorge (from Deerfield River to the ridgetop at Drury) was purchased as a State Forest for $65,000.

But the wayside from Drury across the top plateau and the west slope (more than half the route) was yet unprotected. The necessary wayside land for protecting it could yet (in 1921) be purchased for $76,000. However, no money for this land was appropriated, and private embellishment was allowed to take its course for six long years. Then, in 1927, the pressure was resumed to complete the parkway.

But alas! The values had risen (in the owners' eyes at least) from $76,000 to a cold round million dollars. Even had such an appropriation been available, of what value were the "values"? Tenements, eating joints, and roadside agglomerations! Walter Prichard Eaton would evaluate them under the precise and comprehensive title of "motor slum." H. L. Mencken would evaluate them as the work of "some titanic and aberrant genius uncompromisingly inimical to man who had devoted all the ingenuity of hell to the making of them,"—as the creation of an environment designed to reduce "the whole aspiration of man to a sort of joke."


THE HOOSAC MTN. HIGHWAY WITH PROTECTED WAYSIDE →
North Adams
Whitcomb Summit
Drury
HOOSAC MOUNTAIN
Hoosac Tunnel Level 800 Feet
Sea Level
COLD RIVER VALLEY
0 2 4 6 8 10 12 Miles
APPROPRIATIONS NECESSARY ($1,500,000) DISTRIBUTED THUS →
91 Percent for Highway Construction (Expended)
9 Percent for Proposed Purchase of Wayside Protection Land
FIVE PERCENT SAVED BY REDUCING WAYSIDE PROTECTION →
Five Percent Unappropriated for Wayside Land between A and B
Four Percent Expended for Wayside Land between B and C
A
B
C
SIXTY PERCENT OF WAYSIDE RUINED FOR LACK OF PROTECTION →
Resulting Motor Slum
State Forest
Wayside Protected
0 20 40 60 80 Percent

THE HOOSAC MOUNTAIN HIGHWAY IS A SECTION OF THE MOHAWK TRAIL

This chart shows how its wayside might have been protected, and why it failed to be

The pride, pleasure, or well-being of any person professing to be a proud citizen of Massachusetts, during his transport across this stretch of highway, sinks indeed to a sort of grim mocking "joke" at the stark sight of the state's most virile display of mountain wilderness converted into the state's most wanton display of wayside

slum. What inimical brand of "advertisement" to ask the proud citizens of the other states to enter our own Commonwealth over this embellished mountain "shuttle"?

Saving Five Per Cent and Losing Sixty

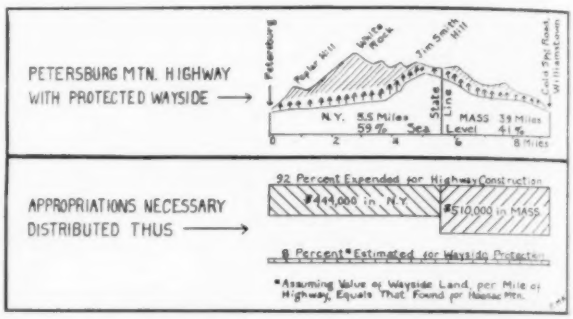
In 1929 and 1930 the shuttle was renovated. A million dollars were spent on highway reconstruction between North Adams and the Deerfield River. All-told since 1911, a million and a half dollars have been sought for this project. Over 90 per cent of this was expended on the roadway itself; 4 per cent was expended on the purchase of the State Forest in the Cold River Gorge (protecting the wayside for two-fifths of the route); the remaining 5 per cent (the $76,000 necessary to protect the remaining three-fifths of the route) was never appropriated. *So the state saved 5 per cent of the money and lost 60 per cent of the wayside.*

This Hoosac chapter is closed—but another is at hand. It is one in which the same principle obtains, namely to act *before* and not *after*. Massachusetts is confronted with another highway—on another mountain. It is not a dozen miles from Hoosac. It is the highway just completed over Petersburg Mountain—part of the next range on the west. Get now the story of this Petersburg highway, and the opportunity which it affords to profit by the Hoosac Mountain failure.

The Petersburg Mountain Highway (or Taconic Trail) is a new section, just completed, of the Mohawk Trail. It is part of the new route from Williamstown, Mass., to Troy, N. Y. It is four miles shorter than the route via Hoosick River. This is not much shorter, but it is very much steeper and a lot more scenic. The new road rises 1,245 feet from Williamstown to the crest of Petersburg Mountain, while the corresponding portion of the Hoosick River route goes almost on the level. Why take this high grade? Partly to save distance. But chiefly to achieve this sublime panorama of the two states. Critical it is, therefore, that this panorama be protected.

Indeed, the highway situation today on Petersburg Mountain corresponds precisely to the situation a decade ago on Hoosac Mountain. The wayside is yet unspoiled. The wayside land can yet be purchased to protect this wayside—and thereby achieve the vital purpose of the new route chosen. Will this be done? Or will Petersburg go the way of Hoosac?

Two states, Massachusetts and New York, must cooperate to save the two sides of the mountain. Already they have cooperated to build the roadbed (*the way*) from Williamstown to Petersburg—at a cost exceeding a million dollars. How about using a margin of money to protect *the wayside* and thereby clinch the real object of the project? How about doing this *before* and *not after*—before and not after the "values" of embellishment put in their appearance. Or are we *again* to observe the spectacle of a 5 per cent saving of money and a 60 per cent loss of wayside?



THE PETERSBURG MOUNTAIN HIGHWAY

This is another section of the Mohawk Trail. The chart shows its wayside still unspoiled and the small cost of protecting it—if done now

Housing and Town Planning Tours to Europe

TWO tours for Americans interested in European housing and town planning have recently been announced, in addition to the trip under the leadership of Dr. Edith Elmer Wood, mentioned in THE AMERICAN CITY for February (page 94).

The first of these is being arranged by the American representative of the Mitteleuropaeisches Reisebuero, the most prominent travel bureau in Central Europe, with headquarters in Berlin. The group taking this tour will sail from New York early in May, spending a few days in England and then visiting some of the most interesting Continental examples of housing and city planning developments in such cities as The Hague, Amsterdam, Brussels, Düsseldorf and Cologne, reaching Berlin in time for the congresses of the International Federation for Housing and Town Planning and of the International Housing Association, June 1-5. For those of the group desirous of visiting the southern part of Europe a very interesting post-convention trip is also planned, beginning June 6. Inquiries should be addressed to the Amerop Travel Service, Inc., 400 Madison Avenue, New York.

For persons wishing to visit Europe during July and August a "vacation study tour of housing" is being arranged and directed by the Garden Cities and Town Planning Association of England in cooperation with the City Affairs Committee, of 112 East 19th Street, New York. This tour is scheduled to sail from New York on July 10 and to visit numerous cities in England, Scotland, Holland, Germany, Austria, Switzerland and France, arriving back in New York on August 30. The announcement states that members of this vacation-study group will be received by public authorities in the various cities visited and will be given an opportunity to discuss with them their local plans and methods.

China and Russia Secure Services of Chicago City Planner

JACOB L. CRANE, JR., city planner, of Chicago, started on February 24th on a trip to China for consultation work there on the city planning of Canton and also on a new seaport and townsite. This latter project is one item in the program for the development of China as outlined ten years ago by Dr. Sun Yat Sen, first president of the Chinese Republic. In spite of civil warfare the nationalist government is carrying out a huge list of improvements—highways, railways, bridges, harbors, airways, and land reclamation.

From China Mr. Crane proceeds to Russia, where Soviet authorities have invited him to advise on technical policies connected with city state and planning. Several new cities are being laid out and built in Russia, and as with industrial production, the Soviets are desirous of adopting the best American city planning and city building principles.

On his way home from Moscow, Mr. Crane will be a delegate to the International Housing and Town Planning Congress in Berlin the first week of June.

The Effects of Population Trends Upon Planning in Metropolitan Regions

The Outward Movement of Population to the Suburbs an Emphatic Argument for Regional Planning and for the Replatting of Blighted Areas

THE Regional Planning Federation of the Philadelphia Tri-State District has just made a public statement of the effects of population trends upon planning in the Philadelphia Tri-State District. The statement was prepared by the Federation's Committee on Population, which comprises authorities in the fields of communications, transportation, economics, housing, real estate, banking, zoning and regional planning.*

The Philadelphia Tri-State District stretches roughly forty miles from the central business section of Philadelphia into the states of Pennsylvania, New Jersey and Delaware. It includes eleven counties and an area of more than 4,500 square miles. Philadelphia County, which is co-extensive with the city of Philadelphia, is in the center, surrounded by Bucks, Montgomery, Chester and Delaware Counties in Pennsylvania, New Castle County in the state of Delaware, and Mercer, Burlington, Camden, Gloucester and Salem Counties in New Jersey.

The principal cities in the district, or region, are Philadelphia, Camden, N. J., Trenton, N. J., Wilmington, Del., and Chester, Pa. The total population increased from 3,058,963 in 1920 to 3,522,049 in 1930.

The Problem

In stating its problem, the Regional Planning Federation's Population Committee declared:

"The outward movement of population to the suburbs is the most emphatic argument for regional planning yet encountered.

"So-called blighted areas have been left in the wake of

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PHILADELPHIA

The Art Museum and Parkway, looking toward the City Hall and central business district

*Herbert L. Badger, Vice-President and General Manager, The Bell Telephone Company of Pennsylvania, is Chairman of the Committee. Other members are Agnew T. Dice, President, The Reading Company; Dr. Harold W. Dodds, Chairman of the Administrative Committee, School of Public and International Affairs, Princeton University; Thomas W. Hulme, Vice-President, Pennsylvania Railroad Company; Bernard J. Newman, Secretary and Managing Director, Philadelphia Housing Association; George B. Robeson, Realtor, Camden, N. J.; Thomas Shallcross, Jr., President, Philadelphia Company for Guaranteeing Mortgages; J. Willison Smith, Philadelphia Zoning Commission; Sylvester D. Townsend, Vice-President, Wilmington Trust Company, Wilmington, Del.; Colonel Samuel P. Wetherill, Jr., President, Regional Planning Federation; and Dr. Joseph H. Willits, Director of the Industrial Research Department, Wharton School of Finance and Commerce, University of Pennsylvania.

population and business shifts both within city limits and toward the outlying sections. Never was there greater need for replanning these areas to eliminate the deteriorating effect they have upon the social and economic progress of the region as a whole.

"The dynamic growth in the suburbs shows the necessity for comprehensive planning of those physical facilities upon which the present and future population depend for comfort, convenience, happiness and prosperity. More parks, more parkways, more highways are needed, and will be needed even more in the not distant future, because eventually the present population of the region will be doubled. What of the future water supply, sanitation, and sewage disposal, transportation and port facilities? Air transport is developing rapidly. What of adequate regional landing fields?"

Trend Toward Metropolitan Areas

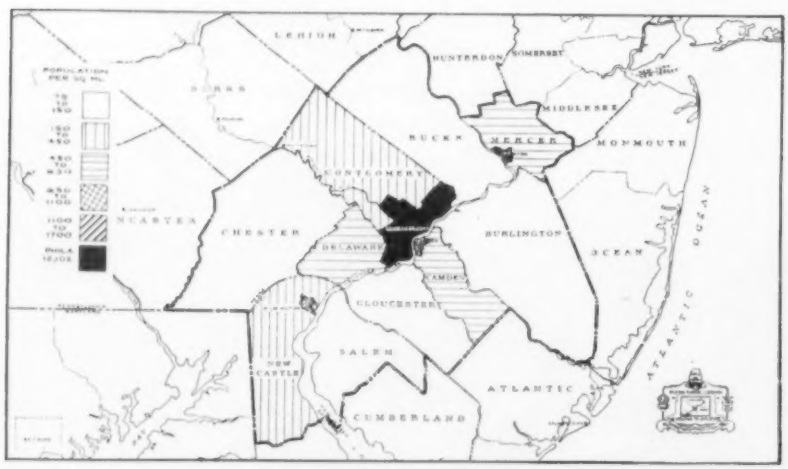
There has been a steady national movement of population for several decades from the rural sections toward the metropolitan areas comprising the large cities and their immediate environs. In 1800 only six places in the United States had a population of 8,000 or more, and these represented 4 per cent of the total population. In 1850 there were 85 such places, comprising 12.5 per cent of the total population. In 1880 there were 285 such places, with 22.7 per cent of the total population, and in 1920 there were 924, comprising 43.8 per cent of the total population.

Philadelphia's Growth

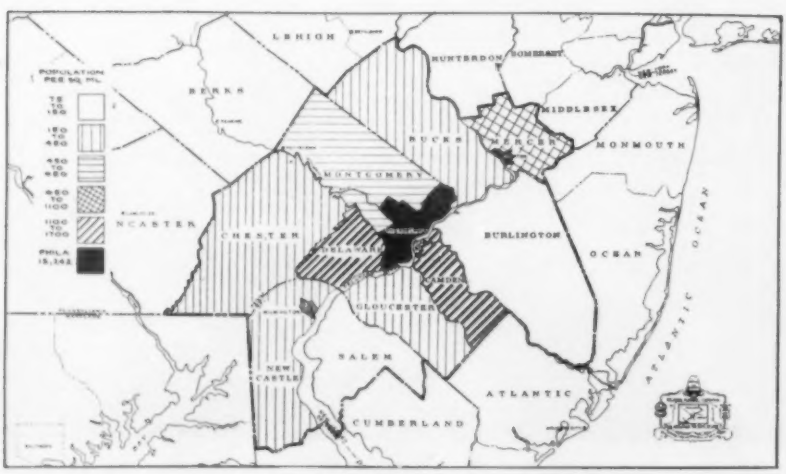
The principal American cities are sharing Philadelphia's experience of growing faster outside than inside the official city limits. That portion of the 1930 tentative Philadelphia metropolitan area which lies outside the city limits increased 42.1 per cent in population in the last ten years. Meanwhile, Philadelphia itself grew in population 7.0 per cent. The increase for the entire metropolitan area, which is considerably smaller than the Philadelphia Tri-State District, was 16.0 per cent. The Philadelphia metropolitan area submitted for approval of the Census Bureau is regarded as of 1,141 square miles, of which the city itself comprises 128 square miles.

Typical of the growth that has been taking place just outside the city limits, Upper Darby Township, at the western gateway to Philadelphia, grew at the phenomenal rate of 421 per cent in the last decade.

In 1910, as the accompanying charts show, Delaware County, west of Philadelphia, and Camden County, southeast of Philadelphia, had average population densities per square mile of between 450 and 650. In 1930 the comparable average densities in these counties were between 1,100 and 1,700.



POPULATION DENSITIES IN PHILADELPHIA TRI-STATE DISTRICT IN 1910



THE SAME DISTRICT IN 1930

How Other Cities and Regions are Growing

The above-mentioned report on Population Trends contains the following paragraphs on the growth of other cities and regions.*

While Chicago itself has had a great growth in population during the last decade, the region surrounding Chicago has increased even faster. The rate of increase for the outlying area was 45 per cent against 25 per cent for the city itself. According to the Chicago Regional Planning Association, Chicago grew from 2,701,705 inhabitants in 1920 to 3,375,235 in 1930. The metropolitan district of Chicago, which is a little smaller than the Chicago region, grew from 3,521,789 inhabitants to 4,673,447, an increase of 33 per cent. The total region, including both city and suburbs, grew from 3,858,818 to 5,053,746, an increase of 31 per cent.

Boston, Cleveland, Detroit and New York likewise all experienced Philadelphia's tendency to grow faster outside the city limits than inside. Boston itself increased in population 4.8 per cent during the last ten years, while its forty-two suburbs grew 25.2 per cent, as compared with 7.0 and 42.1 per cent for Philadelphia and for the outlying portion of its metropolitan areas, respectively. According to the Division of Metropolitan Planning of the Commonwealth of Massachusetts, Boston in 1930 had 783,451, and its suburbs 1,171,784. The total for the two areas was 1,955,235, or an increase of 16.1 per cent.

The Cleveland Chamber of Commerce is authority for the statement that Cleveland has increased in population 12 per cent during the last decade, but that the balance of Cuyahoga County, Ohio, grew 118 per cent. In 1930 Cleveland itself has a population of 900,613 as compared with 805,763 ten years earlier. Meanwhile, the balance of Cuyahoga County increased from 137,732 to 300,712 inhabitants.

* Census figures for cities other than Philadelphia are preliminary.

Detroit's automobile industry has encouraged a tremendous increase in population. The city has been expanding in area as well as in inhabitants. In 1920, according to figures made available by the Detroit Rapid Transit Commission, Detroit had an area of 79.62 square miles. By 1930 this had grown to 139.02 square miles. During the same decade Detroit's population grew 60 per cent, from 993,678 to 1,586,446.

In 1920 the Detroit metropolitan area was regarded as consisting of 448.46 square miles; in 1930 Detroit has asked that 749.16 square miles be regarded as its metropolitan area. This is an increase in area of 67 per cent. The population of the smaller area was 1,164,904 in 1920; the population of the larger area in 1930 is 2,016,795, or an increase of 73 per cent. That portion of the Detroit metropolitan area outside the city contains 430,349 inhabitants, as compared with 171,226 for the smaller area in 1920. This is an increase of 150 per cent in population.

According to the Regional Plan of New York and Its Environs, New York City has increased in population from 5,620,048 in 1920 to 6,981,927 in 1930, the rate of increase being 24.2 per cent. The principal suburban areas, exclusive of densely built-up New York City, Hudson County, N. J., and Newark, N. J., increased during the last decade at a rate of 57.4 per cent, or from 1,383,645 to 2,177,316. The New York region as a whole, roughly the area within a 50-mile radius of City Hall, Manhattan, increased from 8,979,055 to 11,497,198, an increase of 28 per cent.

Factors That Retard Growth

The Regional Planning Federation's statement says that the Regional Plan, now being prepared, should exert a strong, orderly influence upon both the future growth and the distribution of population in the Philadelphia Tri-State District. The statement is emphatic in saying that:

"In the absence of comprehensive planning, serious obstacles to population growth would be set up in Philadelphia, Camden, Trenton, Wilmington, Chester, and other important centers in the region. The increasing costs associated with population concentration may act as deterrents against continued growth. Undue delay or failure to re-plan those so-called blighted areas abandoned by population shifts and by decentralization of business and industry militates against potential population gains and adaptability to other suitable economic uses.

"Business naturally wants to be accessible to the population it serves. It therefore invades the residential sections. Unplanned developments which have driven out the population make the business center less desirable and place a handicap on its economic administration. In time, premature obsolescence of building sets in, and soon the business center is on the move to another location where there is danger that the unplanned developments of the old section will be reproduced in kind.

"The crux of the problem is that, through failure to plan adequately and comprehensively for the needs of the residential and business population, suitability of sites is destroyed. And in the absence of re-planning there appears to be no power sufficiently strong to effect an appreciable improvement. Thus the large cities are experiencing population losses and the spread of subnormal residential and business areas. By planning well in advance, it should be possible to recognize possible shifts in population and, if the shifts are imminent, to see that the transition occurs in an orderly fashion and that the migrating population goes to a community better planned than the one left behind. Likewise, by planning far ahead, it should be possible to keep a check upon areas where blight threatens or is incipient, so that an adequate program of rehabilitation could be initiated and stability maintained.

"Generally, the lack of coordinated planning of the major physical facilities, upon which the continued prosperity of the region depends, such as railways, highways, airports and airways; ports and waterways; parks, parkways and recreational centers; and sanitation, drainage and water supply, will repel migration of population from other sections of the country. But most deterrents to population growth are artificial and can be overcome by wise planning and cooperation among the 400 governmental units that compose the region. Such planning will encourage local autonomy and tend to preserve community identity."

Conclusions

The statement is concluded by citing the need for alert, constant study:

"Planning is never ending. The most carefully prepared programs for the future, whether they be city plans, county plans or regional plans, require constant adaptation to rapidly changing conditions. No plan ever can be said to be complete, however sound in principle and in basic recommendations. Economic forces, suddenly released through some new invention or mode of transportation, may set in motion new population shifts or migrations. But alert, constant study of all the factors that make for livability and progress in our metropolitan centers should result in planning of such far-seeing character that the danger signals to general regional prosperity would be detected, remedial steps taken at once, and positive measures set in force to maintain consistent growth."

San Diego Limits Height of Buildings Near Municipal Airport

AFTER fifteen months of effort by the Aviation Department of the San Diego Chamber of Commerce, an ordinance has been adopted by the City Council of San Diego limiting the height of buildings in the area adjacent to the municipal airport, Lindbergh Field, which is 1½ miles from the center of the business district. According to Thomas F. Bomar, manager of the Chamber's Aviation Department, it was necessary to survey the vicinity of the field, make contour maps of that area, convince the property owners and the City Planning Commission of the necessity and desirability of the ordinance, and then overcome the efforts of the few objectors before the City Council.

The ordinance, which is believed to set a precedent that many other cities are likely to follow, includes these provisions:

Section 1. In order to promote the public health, safety and general welfare, and to assist in relieving the dangers incident to and from aircraft using the Municipal Airport, there is hereby established a maximum height to which buildings may be built. It is hereby declared that no building, smokestack, tower or other structure shall be constructed of such height that the angle made with the horizontal by the shortest line drawn from the highest point of said structure to the easterly boundary line of the landing field of the Municipal Airport shall not exceed 8° 7′.

Excepting, however, that the height of any building, smokestack, tower or other object shall in no case be limited to less than 50 feet above the curb level of the street adjacent to and on which said building, smokestack, tower or other structure fronts.

Section 2. Any person, firm or corporation violating any of the provisions of this ordinance shall be guilty of a misdemeanor and upon conviction thereof shall be punishable by a fine of not more than $500 or by imprisonment in the city jail for a period of not more than 6 months, or by both such fine and imprisonment. Each such person, firm or corporation shall be deemed guilty of a separate offense for every day during any portion of which any violation of any provision of this ordinance is committed, continued, or permitted by such person, firm or corporation, and shall be punishable therefore as provided by such ordinance.

The first unit of Lindbergh Field is now completed and the work of filling the tideland area north of the first unit is under way. This work is being done by United States Army engineers who are dredging a turning basin adjacent to the municipal piers and dumping the spoil at Lindbergh Field. The Aviation Committee of the Chamber is responsible for the acquisition of this area adjacent to Lindbergh Field through an exchange of tideland areas with the Marine Corps. The airport is served by several transport routes, and the enforcement of the new ordinance should give added assurance of safety and convenience.

Relief of Traffic Congestion by Changes in Business Hours

With Special Reference to Practices in Financial and Non-Retail Establishments

By **MILLER McCLINTOCK**
Director, The Albert Russel Erskine Bureau, Harvard University

STREET traffic conditions have come to be one of the most critical problems confronting business in the central districts of American cities. Business activity itself is largely responsible for present conditions of congestion and inconvenience. Commercial growth and concentration as illustrated in skyscrapers and great retail plants have increased demands upon traffic and transportation facilities. During certain periods and in certain districts these demands create an overload resulting in acute congestion.

It is unnecessary to emphasize to any business man that congestion is a definite threat to growth and prosperity. Inconvenience and delays in traffic and transportation discourage patronage. When the point of traffic saturation is reached, further business expansion is precluded. In all the major cities this impaired accessibility resulting from congestion has resulted in decentralization or shifts which have lowered the value of established business property. A further evil of congestion is to be found in the increased cost of transportation both for persons and for commodities.

Relief Measures

Since the street traffic situation is largely a business man's problem, its solution should be approached in a businesslike manner. This has been the attempt of the San Francisco Traffic Survey Committee during the past four years guided and supported by prominent business leaders. Its policy may be summarized in a single statement: "First provide for maximum efficiency and safety in our present traffic facilities, and then add to their capacity by physical improvements."

Unfortunately, the physical capacity of the streets of the central business district of San Francisco, as of many other cities, is quite definitely fixed. General street widenings cannot be contemplated, because of the cost involved. Eventually, subways for street cars will offer important relief in certain districts, but a comprehensive rapid-transit system is a development for the relatively distant future. Thus, relief in the central district must be sought through methods which will increase the efficiency of existing facilities. It is for this reason that the first efforts of the Committee were directed toward obtaining improved traffic regulations and control mechanisms. The results of these improvements are to be found in a greatly lessened death rate and in a greatly increased facility of movement. These changes may be said to be an adjustment of traffic to business requirements. Alone they are not adequate.

Basic studies which have been completed now point to an opportunity to obtain further traffic and transportation improvements by the adjustment of business practices to traffic requirements. Fortunately these necessary changes are very desirable also for internal business operations.

How Present Business Habits Create Undesirable Traffic Congestion

The streets of the central business district in San Francisco and the routes leading to the district show a substantial volume of traffic activity during all hours of the business day. There are two periods, however, when an acute overload is experienced:

1. One is to be found in the morning in the hour between eight and nine o'clock, and is occasioned by the so-called inrush of workers. Attention is called to the accompanying chart, where existing movements of persons into the district are shown by half-hour periods for the morning. The 30-minute period from 8:00 to 8:30 accommodates an in-movement of almost 35,000 persons. The load during the following half-hour period (8:30 to 9:00) marks the peak of the inrush with a total of almost 39,000 persons. The abruptness with which this load falls to a total of less than 22,000 in the period from 9:00 to 9:30, and to a total of less than 16,000 in the period from 9:30 to 10:00 is notable. This overloading during the morning peak hour is occasioned primarily by openings of the great majority of commercial and retail establishments. The severity of the morning peak is sufficient to warrant careful consideration.

2. The afternoon peak, however, demonstrates a far more serious situation. This takes place in the hour between five and six o'clock. It is graphically illustrated in the chart. During the 30-minute period from 5:00 until 5:30 more than

A San Francisco Study of Widespread Application

San Francisco, like other metropolitan centers, is confronted with a serious traffic and transportation problem. The most acute aspect of this problem is to be found in peak loads in the rush hours of the morning and afternoon. Adoption of the recommendations here outlined will, it is believed, make it possible for the central district business to grow approximately 33 per cent before maximum loads equivalent to those now existing are again experienced. This tremendous expansion of efficiency in existing facilities can be obtained without the expenditure of a single penny. Furthermore, the recommended change will have as a desirable by-product an adjustment of business operations making possible an intensive development of the district's purchasing power. It should serve as a valuable protection against abnormal decentralization and inter-city competition.

The proposed staggering of business hours has already had the endorsement of civic organizations and of many major executives, and it is hoped that the new plan will become actually effective within the next month.

62,500 persons leave the central business district. This outbound peak load is more than 50 per cent greater than the peak inbound load of the maximum morning half-hour. It will be observed that the period from 5:30 to 6:00 o'clock is likewise one of great traffic activity, for during these thirty minutes more than 40,000 persons leave the district—a number somewhat greater than the inbound half-hour peak of the morning. The outbound peak of the afternoon results primarily from the closing of the business day in a large number of establishments at 5:00 o'clock, and at 5:30.

Perhaps the most undesirable effects of overcrowding resulting from peak loads are to be found in inconvenience which discourages patrons and clients from using the commercial and mercantile facilities of the central district and their tendency to seek more convenient services in outlying districts or suburban communities. It may be said with certainty, however, that the more severe aspect of existing peak loads are the result of purely traditional and illogical business practices, which are as detrimental to efficient business operation as they are to economical and satisfactory traffic and transportation.

Activities Primarily Responsible for Peak Loads

The central district in San Francisco serves as an area of attraction for thousands who live in the city and county proper and in the entire metropolitan region. The activities of the business district that are primarily responsible for this attraction may be classified as:

1. *Retail trade*, including department stores, specialty shops, and many smaller establishments.

2. *Non-retail business*, including wholesaling, light manufacturing, clerical and executive work (e.g., offices of insurance companies), and various types of professional services.

3. *Financial operations*, including banking and brokerage.

In order that the traffic and transportation demands of each of these three classes might be definitely known, a study has been made of the opening and closing hours of establishments which employ more than twenty persons in the central business district of San Francisco.

This study involved obtaining data from 87 retail firms with a total of 12,946 employees, 295 non-retail firms with a total of 24,944 employees, and 43 financial establishments with a total of 6,777 employees. The employees of the firms of the three classes studied total 44,667. It is recognized that this total does not represent all persons engaged in these activities, but it is adequate in size to reveal loading characteristics. This constitutes a large part of what may be called the base load on the central district.

When these employees come to work and when they go home governs to a very considerable degree the characteristics of the peak loads. A summary of these facts is presented in Table 1. Nine o'clock openings are shown to account for 20,268 employees, or almost half of the employee total. This results from the concurrent opening of retail firms with 9,213 employees, non-retail firms with 7,689 employees, and financial firms with 3,366 employees. These nine o'clock arrivals enter the district in the half-hour between 8:30 and 9:00 A.M. and are obviously the principal causes for the peak load during that period.

Attention is next directed, in Table 1, to closing hours. The high point is five o'clock, which accounts for a release of 21,020 employees. This load results primarily from a coincidence in the closing hours of non-retail and financial establishments. It is reflected in the critical outbound peak loads of the district, as shown in the chart, in the period between 5:00 and 5:30. It is far more acute than the morning peak, because the larger load of released employees is augmented by an outbound movement of shoppers and patrons who have accumulated in the district during the business day.

In Table 1 attention is further directed to the 5:30 release, which accounts for 14,647 employees, resulting from the simultaneous closing of retail and non-retail establishments, the former with 8,964 employees and the latter with 5,648 employees.

Effect of Present Practices on Central District Business

Rather than being in line with sound business development, it is believed that the present practice as revealed in Table I definitely militates against the best development of a unified business district, for the following reasons:

In the non-retail and financial groups there are a considerable number of services which logically should be patronized by the 12,946 employees of retail establishments. These include professional services—medical, dental and legal—insurance and financing. Under present conditions with the great majority of store employees (9,213) due to work at nine o'clock no opportunity is presented in the morning so far as many of non-retail and financial establishments are concerned, for they do not open until nine o'clock. The opportunity for such contracts in the evening hours is similarly non-existent, for non-retail and financial firms close before or concurrently with store closings.

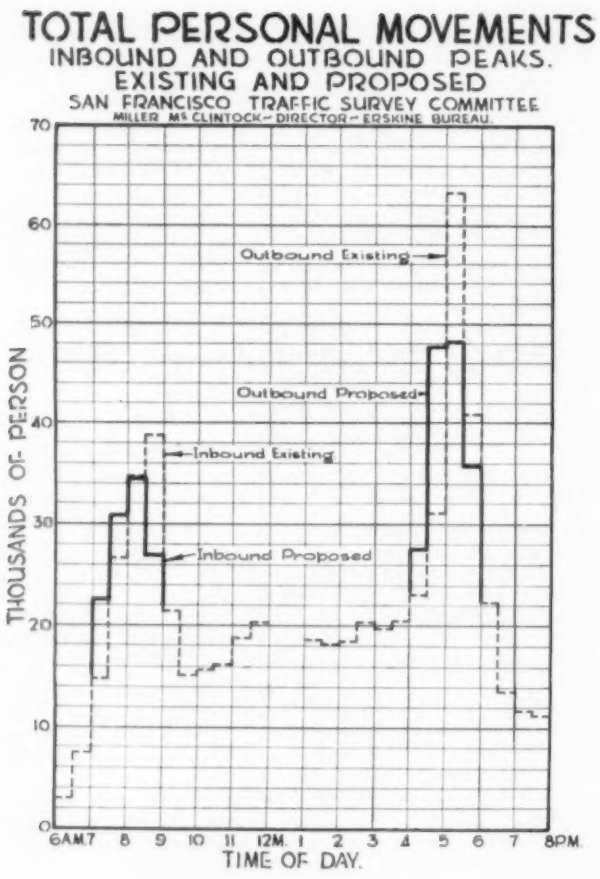
The services offered by the retail groups are well designed to answer the needs of the 31,721 persons composing the non-retail and financial groups. With the great majority of retail establishments opening at nine o'clock, it is observed that the morning presents little or no opportunity for sales contacts under present conditions. Practice with respect to the afternoon hours is scarcely more favorable. The great majority of the retail houses close at 5:30. This is concurrent with the closing of non-retail establishments releasing 5,648 employees. It is apparent that this group of employees has no opportunity whatsoever to patronize central district retailers after release. Five o'clock releases in non-retail establishments account for 14,508 employees, and financial establishments for 5,201 employees, totaling 19,709. This group has inadequate opportunity for retail purchases. Under average conditions they would be forced to enter retail houses within the last fifteen or twenty minutes of the business day. The period is notoriously bad for new sales contacts and is entirely inadequate for purchases involving judgment, careful selection or try-ons.

It is apparent that there is an economic interdependence between all property owners or leaseholders in the central district. Improved non-retail and financial operations mean expansion in these activities, more employees and therefore more potential customers. Improved retail operations inevitably mean increased prosperity for financial and non-retail business.

In summary it may be said that in the face of a definite tendency toward decentralization and in view of an increasing inter-city competition in the bay region, the present practices of San Francisco's central business district tend to destroy an important "home market" and to drive valuable business to outlying competitors.

TABLE 1—OPENING AND CLOSING HOURS OF CENTRAL DISTRICT ESTABLISHMENTS EMPLOYING MORE THAN TWENTY PERSONS

	Number of Employees Arriving					Totals		Number of Employees Leaving						
	7:45	8:00	8:15	8:30	8:45	9:00		4:30	4:45	5:00	5:15	5:30	5:45	6:00
87 Retail	185	686	635	2,017	210	9,213	(12,946)	640	44	1,311		8,964		1,987
295 Non-retail	877	5,737	1,187	8,654	800	7,689	(24,944)	1,312	1,899	14,508	1,187	5,648	35	355
43 Financial	367	808	62	2,174		3,366	(6,777)	1,172		5,201	88	35		281
Totals	1,429	7,231	1,884	12,845	1,010	20,268	(44,667)	3,124	1,943	21,020	1,275	14,647	35	2,623


TOTAL PERSONAL MOVEMENTS
INBOUND AND OUTBOUND PEAKS.
EXISTING AND PROPOSED
SAN FRANCISCO TRAFFIC SURVEY COMMITTEE
MILLER McCLINTOCK-DIRECTOR-ERSKINE BUREAU
Outbound Existing
Outbound Proposed
Inbound Existing
Inbound Proposed
THOUSANDS OF PERSON
TIME OF DAY
6AM 7 8 9 10 11 12M 1 2 3 4 5 6 7 8PM
0 10 20 30 40 50 60 70

Recommended Changes in Business Hours

For the improvement of business conditions and for a reduction in excessive peak loads, it is recommended that:

*Non-retail and financial establishments should open and close thirty minutes earlier than is now the practice.**

Effect of Recommendation on Peak Loads

The resulting half-hour district loads for morning and afternoon rush periods, compared with existing conditions, are shown by the solid lines in the chart.

Attention is directed to the striking improvements. In the morning the maximum half-hour load is reduced by 4,310 personal movements. It is transferred to the period ending at 8:30 with a total of 34,447.

In the afternoon the peak half-hour load coming in the period ending at 5:30 is reduced from 63,382 to 48,116, or by 24.1 per cent. The second most important load now existing—that ending at 6:00 P.M.—is reduced from 40,932 to 35,850. The new secondary peak will fall in the period ending at 5:00 P.M. with a load of 47,680.

Effect of Recommendations on Traffic and Transportation

The reductions in peak loads as graphically illustrated in the chart will have a very basic effect in freeing traffic and transportation facilities.

In the morning rush the maximum demand for personal movements into the district during any half-hour period will be 4,310 less than at present. This is a substantial improvement, but the traffic and transportation benefits in the afternoon period will be far more striking. The peak half-hour ending at 5:30 will carry 15,266 fewer personal movements than at present. Just what this will mean to the major agencies of transportation is revealed by a further analysis. The present and proposed loadings during the peak half hour are shown in Table 2.

TABLE 2—MAJOR TRANSPORTATION METHODS USED BY PERSONS COMPOSING PEAK LOAD ENDING AT 5:30

Transportation Method	At Present No. Persons Now	Under Proposed Shifts* No. Persons After Shift	At Present No. Units Now	Under Proposed Shifts* No. Units After Shift	Reduction No. Units
Passenger auto	5,786	4,330	4,046	3,320	726
Taxicabs	854	641	423	317	106
Street cars	37,503	28,110	515	386	129
Pedestrians	18,529	13,885	....	....	....

*Trucks and horse-drawn not included.

Effect of Recommendation on Business Operations

The recommended changes are in direct line with what are believed to be sound business requirements.

All establishments are interested in the welfare of their personnel. Employees who are now forced to waste time and energy in traveling to and from work and under uncomfortable and crowded conditions will be able to travel under more favorable circumstances. The improvements in transportation have already been noted above.

The recommendations contemplate no change in the length of the working day in any establishment nor any change of more than thirty minutes in openings or closings.

Luncheon releases will be greatly facilitated, resulting in more even elevator loads and in less crowded conditions in restaurants. Noontime shopping by non-retail and financial employees will be at periods which will conflict less than under present conditions with luncheon releases of retail employees.

The earlier openings for non-retail and financial establishments will bring them into closer conformity with eastern banking hours, and will provide periods ranging from thirty minutes to one hour and a half when their services may be patronized by the 12,946 retail employees.

The retail stores should especially profit from an opportunity to intensively develop a "home market" represented by 19,709 non-retail and financial workers in the larger central district firms. The 5,683 non-retail and financial employees now released at 5:30 have no shopping opportunity. Under the new plan they will be released at 5:00 o'clock and will have 30 minutes before stores close. The 19,709 such employees now released at 5:00 will be released at 4:30 and will have an hour before stores close.

The actual effect of this retail attraction on the traffic and transportation peak load cannot be computed precisely. It will vary with the initiative of retail and entertainment facilities in taking advantage of the physical opportunity presented. Under any conditions it will be substantial. Any hold-overs that are effected will add directly to the efficiency of the new plan by throwing such loads into the six o'clock or later period and thus further reducing the demands in the periods ending at 5:00 and at 5:30.

"Methods for Studying Traffic Control Problems"
is the title of an important article by Dwight McCracken and Dr. McClintock in the 1931 MUNICIPAL INDEX, now in course of preparation.

* This recommendation does not apply to firms which open at 7:30 or earlier, and which close at 4:30 or earlier.

County-Seat Improves Pressure in Distribution System

Van Wert,, Ohio, Installs Tank with Water Level Balanced with Old Tank Installed 30 Years Ago

THE water supply of Van Wert, Ohio, which is the county-seat of Van Wert County, and which has a population of approximately 8,500 people, is obtained from four deep wells. Three of them are pumped by piston type deep-well pumps, and one is pumped by compressed air. The discharge from the wells is collected in a 30,000-gallon suction reservoir or cistern. The water is pumped into the system from the cistern by two electric motor-driven centrifugal pumps having a rated capacity of 1,000 gallons per minute each.

The city is served by a complete distribution system of mains ranging from 4 to 16 inches in diameter. There are approximately 2,200 service connections. The community uses about 500,000 gallons per day. The exact amount used is unknown, as there is no master-meter at the pumping station and only about one-half of the services are metered.

Elevated Storage

The amount of storage provided by a 120,000-gallon elevated tank which was erected in 1900 became entirely too small for a city the size of Van Wert, particularly in view of the fact that it was impossible to operate both of the high-service centrifugal pumps at the same time. Additional elevated storage was recommended in 1929 in order to provide for greater flow for fire protection.

An ellipsoidal-bottom elevated tank made by The Chicago Bridge and Iron Works was built as near the center of the city as was possible. It was necessary to lay 2,390 feet of 12-inch main and 2,745 feet of 8-inch main in order to connect the new tank to the distribution system. This additional main also reinforced the existing distribution system, which was weak in the particular section of the city in which the tank was located.

Balancing the Tanks

The overflow elevation of the new tank required considerable study in order to fix it at a point such that the maximum use could be had on both the new and the old tanks. The distribution system was cross-connected in gridiron fashion between the pumping station and the new

THE NEW ELEVATED STEEL TANK

tank site, making it difficult to calculate or even closely approximate the probable loss of head between these two points. This calculation was further complicated by the fact that service connections were taken off at various points, so that the quantity flowing at any given point was very uncertain. Consideration also had to be given to the fact that the friction loss between the pumping station and the old tank was practically zero, which meant that the difference of elevation of the water in the two tanks when the pumps were in operation would be the amount of the friction loss between the two tanks. Then when the pumps shut down, the water elevation in the two tanks would equalize.

Calculations as to Differences in Overflow Elevation Proven Correct

Various calculations were made on assumptions which seemed to best fit the conditions encountered, and the relative elevation of the overflow from the two tanks was fixed. Practical operation has shown that, although the tanks are over a mile apart and connected as described above, the calculated elevation for the overflow in the new tank was only three inches above the high-water line in the new tank. Inasmuch as it was determined that the old tank at the pumping station should always overflow before the new tank overflow went into service, this three inches excess height in the new tank is a satisfactory margin of safety, and proves that the assumptions on which the calculations were based were properly made.

The plans and specifications for this work were prepared by The Jennings-Lawrence Co., consulting engineers, Columbus, Ohio, who also supervised the construction of the tank installation of the additional mains required. The mains were installed by S. L. Cotheral, of Toledo, Ohio.

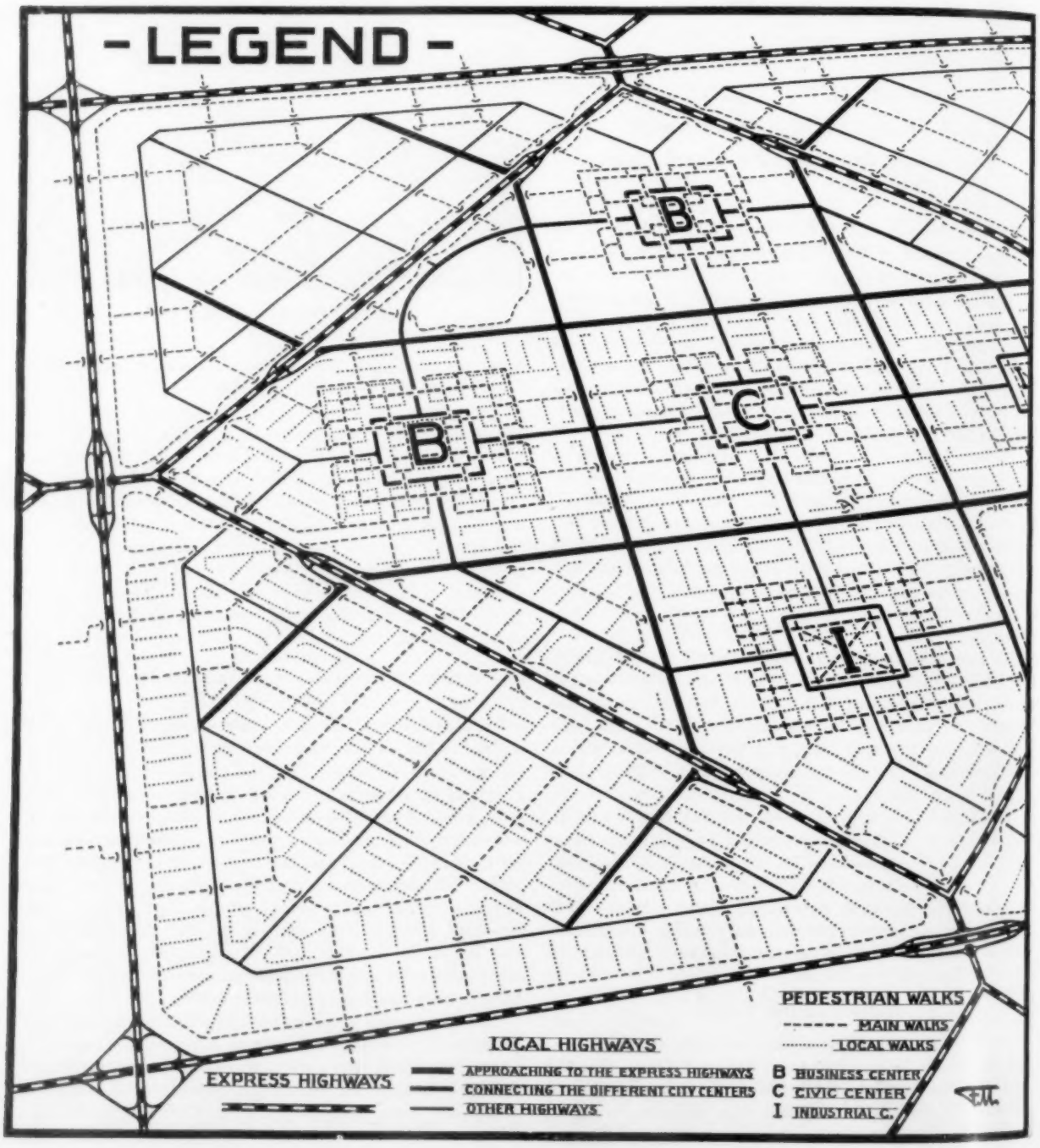
A Traffic Planner Imagines a City

IMAGINE A CITY where the street system permits vehicles to move without obstructions, traffic lights or officers, with automatic regulation of speed and capacity; where pedestrians can walk continuously through the whole city area—no matter whether this be in the outskirts or in the center—without any fear and danger of vehicular traffic; where highways and walks are distinctly separated from each other, being situated in strips of park land which are likewise distributed over the whole city, surrounding each building group of the size of a usual block.

Such a city ideal we can make come true.

The illustration of "A New City Plan" shows how, in a city three miles square, by grouping the buildings of a city in various functional centers, we can get the necessary decentralization of city traffic, keeping the through traffic outside of the different city centers on properly planned express highways and using for the local traffic the "steadyflow" system.* Also, the approach-lanes to the building-groups, on the cul-de-sac principle already realized elsewhere, and the layout of parkways, parks and playgrounds, will easily be recognized in the illustration.

* Reprints of this and other papers describing the "steadyflow" system are available on application to the author, now at 114 East 37th Street, New York.



The classification of the different highways and the layout of the main and local walks for pedestrians are explained in the "Legend," but without the details of the intersections and separated roadways which are worked out in the perspective drawing. All walks are strictly separated from the roadways through under- or over-passes, and by following the lines of these walks it will be found that pedestrians are able to walk safely through the whole city.

And imagine also the principles of this layout applied to the rebuilding of existing cities for the convenience and safety of their inhabitants.

FRITZ MALCHER.

For More Systematic Development of County Highways

Activities and Plans of the National County Roads Planning Commission

By GEORGE W. FARNY
Vice-President, National Highways Association

THE consensus of opinion of several leading national organizations interested in highways is that heretofore county roads have been built in a haphazard manner without having at their command a comprehensive plan of a system of highways. The methods of securing such a comprehensive plan of a complete highway system have not been developed. Even the progressive counties in the country, those that fully recognize the advantages and even the necessity of such a plan, feel the lack of information on this subject. There existed, therefore, the necessity for a practical application of methods to develop plans for a complete system of highways in a few selected, representative counties throughout the country; and to perform the work in such a way as to demonstrate to other counties the value of having a thoroughly comprehensive highway system.

In view of the fact that the 3,078 counties in the United States can be subdivided into a few groups so that the counties of each group have similar characteristics from the standpoint of the highway problems, it was suggested that one county in each of the groups should be selected for an extensive study, fact-finding survey, and planning with the view of developing a comprehensive plan of a complete system of highways, to be used by other counties of the same group as an example and a lesson to follow.

It is for the purpose of carrying out the above-outlined work that the National County Roads Planning Commission has been organized and financed by leading national organizations and corporations interested in highways and highway development in the country, namely:

American Farm Bureau Federation
American Road Builders' Association
American Tar Products Co.
Asphalt Institute
General Crushed Stone Co.
Lee Highway Association
National Crushed Stone Association
National Highways Association
National Paving Brick Manufacturers Association
Portland Cement Association
Standard Oil Co. of New Jersey
Tri-State Regional Planning Federation
Universal Atlas Cement Co.
Warren Brothers Co.

Each of the foregoing has appointed one delegate to be a member of the Commission, and the Commissioners have elected one of its members, Major George W. Farny, of Morris Plains, N. J., as Chairman.

The first county which was subjected to the study was Prince William County in Virginia, a purely agricultural county having the disadvantages of low ratables and rather extensive mileage for the low density of population.

The second county, which is now being studied, is Morris County in New Jersey, a county which is of interest because of its position in the metropolitan area, having high ratables and a fairly high density of population.

Further counties, representative of distinct characteristics, will be studied in the near future.

Recommendations Based on the Morris County Study

A progress report presented at the recent St. Louis Convention of the American Road Builders' Association, covers a study of numerous subjects having bearing upon the planning of a system of highways for Morris County, N. J. These include: Population; Automobile Registration and Gasoline Consumption; Existing Highway System; Highway Traffic; Taxation and Wealth; Climate, Topography and Geology; and Parkways.

Although a considerable amount of work has been done in preparing the necessary tabulations, a great deal more work will be required before the survey can be considered as having been completed. However, even in this preliminary stage of the study, it is obvious that in order to create a comprehensive system, an extensive study, survey and planning of all conditions bearing upon the problem of transportation is of imperative importance for the following reasons:

1. Only then will it be possible to uncover the vulnerable points in the existing highways.

2. It will become obvious where links and by-passes will be useful, essential or absolutely indispensable to readjust and reapportion the traffic.

3. It will permit the extension of the mileage of highways to round out the whole system of highways in harmony with the demand of traffic.

4. It will permit the harmonizing of the taxpayers' burden to the counties' economic structure.

5. It becomes obvious that the proper comprehensive system of highways necessitates a coordinated zoning and planning of the county as a whole, with a subsequent zoning and planning of individual communities.

6. It becomes obvious that the increase in ratables expected from the construction of an improved highway between any two given points does not necessarily follow, and that in some particular cases in counties located in proximity to a metropolis, as in the case of Morris County, a highway attracts the establishment of hot dog stands, gasoline stands, Barney Google stands, palmists and other objectionable features, followed by the region's becoming undesirable from the standpoint of settlement by home builders and therefore does not lead to the increase in ratables.

7. The latter can be corrected by having the highway built as a parkway, eliminating the undesirable features of the latter and helping in balancing the traffic in a more satisfactory way.

The point suggested by No. 4 must be particularly emphasized and the collected data must illuminate the subject so thoroughly that there should be no doubt left in the minds of the county government as well as the citizens of the county that the proposed comprehensive system of highways for the given county not only can be carried out but should be put into effect and execution for the proper economic development of the county.

FORWARD STEPS

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

San Diego Chamber of Commerce Occupies New Quarters

SAN DIEGO, CAL.—After having been located for the past seventeen years in leased quarters, the San Diego Chamber of Commerce, the oldest organization of its type in California, has moved into its own new building. The formal opening and dedication ceremonies were held Saturday, January 17, with city and county officials, naval and military officers, and officials of the Los Angeles Chamber of Commerce participating. On the opening day 4,200 persons inspected the new quarters.

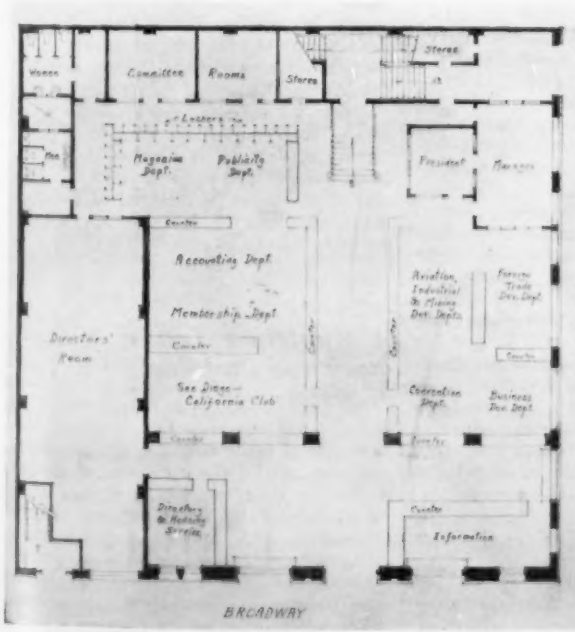
The new building, two stories in height, stands on the corner of Broadway and Columbia Street, convenient to steamship and railroad terminals, the municipal airport, and main highways. At the same time it is in the business district of the city.

Officials of the Chamber are especially proud of the fact that their new home has been entirely paid for without using any of the general fund of the organization. The Chamber purchased an existing building for $75,000 and had it remodeled and refinished at a cost of $32,000. The architects were Requa & Jackson and the general contract was handled by Walter Trepte. The building is of the Spanish type throughout and provides not only a very artistic effect but also a very efficient business plant.

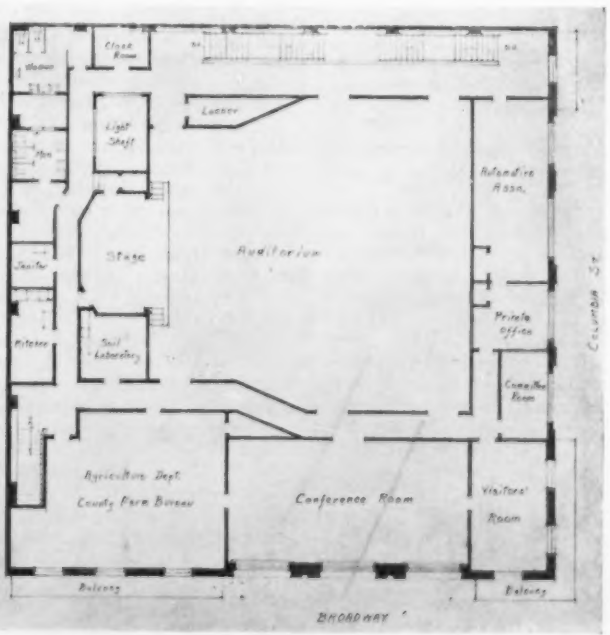
A visitor coming through the main entrance on Broadway finds himself in a spacious loggia, with a beamed ceiling separated from the main office by a series of arches. On the right is the information counter and telephone switchboard; on the left is the Housing Bureau and Directory Service Bureau. Facing the entrance is a wide aisle with counters on both sides. At the rear of the building is a broad stairway leading to the upper floor.

The Federation of State Societies has arranged for a permanent secretary who will be on duty in the main lobby on the first floor to meet newcomers and assist them in finding acquaintances from their home states. State societies will also use the conference room on the second floor for their regular meetings. The Federation assisted in the dedication ceremonies by sponsoring a dance in the auditorium. Six hundred persons participated in this event.

NEW BUILDING OF THE SAN DIEGO CHAMBER OF COMMERCE



FIRST FLOOR PLAN



SECOND FLOOR PLAN

THE INFORMATION COUNTER IN THE LOBBY OF THE NEW BUILDING OF THE SAN DIEGO CHAMBER OF COMMERCE, AND THE EAST SIDE OF THE MAIN OFFICE

There are three entrances to the second floor, one from Broadway, one from Columbia Street, and the other from the main office down stairs. Approximately half of the second floor area is given over to an auditorium, which has a seating capacity of over 400. This auditorium fills a long-felt need in San Diego, as it affords a suitable place for the staging of amateur theatricals, convention sessions, lectures and dances.

The Spanish effect of the entire building has been heightened by the installation of full-length windows opening on balconies on the second floor. Ferns and flowers in brightly painted pots are placed on these balconies. The roof of the building is of Spanish tile. The exterior and interior walls are of rough stucco finish.

Officials of the Chamber feel that the acquisition of this new building by the Chamber of Commerce is indicative of the prosperity and development of San Diego, and that the city may well be proud of this new addition to its downtown section.

THOMAS F. BOMAR,
Manager, Industrial Department, Chamber of Commerce.

Police and Firemen Qualify as Life Savers

FAIRMONT, W. VA.—Firemen of this city are equipped to do more than fire fighting in the future, and city policemen will serve in a capacity other than that of maintaining order. They are adept at first-aid work and life saving and resuscitation.

Last September, when interest in life saving was at its peak in the city, the Fairmont Chapter of the American Red Cross offered to give free lessons in first aid, in cooperation with the Mountaineer Area Boy Scout executive, Phil B. Weaver. At the same time the Y.M.C.A. physical director, R. R. Rinehart, offered to cooperate with the Red Cross in giving life-saving tests to those who felt a need of such instruction. Shortage of water, however, necessitated giving up the plan of using the Y. M. C. A. pool for these lessons.

W. B. Moran, Chief of Police, immediately laid plans for enrolling both policemen and firemen and any other city attaches who desired to take part in classes of instruction. Seven men, who had had previous instruction, entered the class and completed the tests within a few weeks.

So much enthusiasm was created that immediately after the Christmas holidays the class was reopened under the direction of Scout Executive Weaver and Mr. Rinehart. Thirty-five city attaches attended the classes which were held during two evenings each week until the middle of February. The advanced first-aid course for policemen was completed February 6, with 29 passing it.

ORESSA TEAGARDEN.

Street Widening at Main Intersections Improves Traffic Conditions and Labor Situation

LAKEWOOD, OHIO.—Because of its location on the shore of Lake Erie adjoining the western boundary of the city of Cleveland, Lakewood has a peculiar traffic problem. As it is a residential suburb, we have a large number—approximately 18,000—of locally owned automobiles. In addition to this fact, there are four main city highways passing directly through the city, besides secondary highways. The combination of these factors of traffic congestion makes a considerable problem in this small district covering less than six square miles, and naturally makes it necessary to provide more and more traffic facilities and parking facilities.

With this purpose in view, we have adopted a plan to increase the capacity at intersections of side streets and main streets by increasing the width of the lesser street about six feet on each side, going back from the main street a distance equal to the depth of the business lots fronting on the main street. This provides additional and better parking facilities and relieves congestion on the main thoroughfares. In the last three years we have completed about 45 such widenings at intersections.

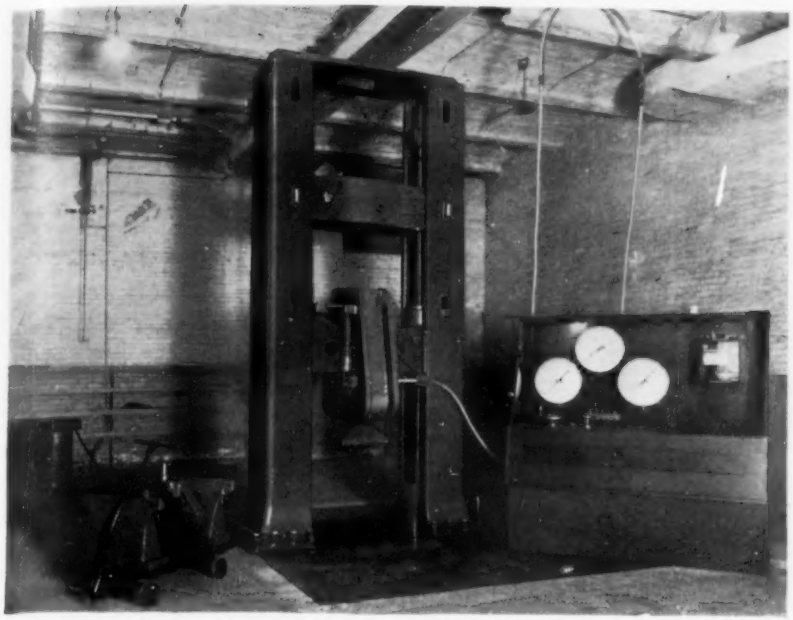
We are now undertaking the widening of some of the main streets themselves. In one instance, Madison Avenue, six feet is being added on each side, by taking away that much of the width of the tree lawn, leaving merely the problem of doing the work. On Detroit Avenue, which is the main business thoroughfare and only sixty feet wide, we have a different problem. In this case, we are widening by ten feet on each side, but acquiring now only those portions where the buildings are not constructed up to the line, reserving the rest of the widening for a later time. There are a number of large buildings involved, and this of course will mean considerable expense, which we are not prepared to meet immediately. By taking the unimproved land, we are forestalling the necessity of paying damages for any more buildings than now exist.

This work is being done by direct labor under supervision of our Street Department. It gives us an opportunity to put our unemployed labor to work and, being done by our own men, eliminates additional inspection costs. Last summer the number of men employed on street work was greatly increased over the usual force, and as soon as weather permits, a large number will again be working. The cost of this work is charged to gasoline tax funds, and so does not add to the property owners' taxes.

EDWARD A. WIEGAND,
Mayor.

A Municipal Testing Laboratory for Building Materials

HARTFORD, CONN.—The Building Department of this city has in the past been handicapped by the necessity of delays in determining whether materials proposed for building operations met the requirements of the building code. Having no laboratory for making the appropriate tests, the Department was obliged to send samples of materials to the laboratories of Columbia University, Watertown Arsenal, Massachusetts Institute of



A CORNER OF HARTFORD'S TESTING LABORATORY

Technology, Yale University, Underwriters' Laboratories, etc. This involved undesirable delays. Furthermore, single tests were hardly conclusive; certain building regulations had to be more rigorous than if sufficient tests could be readily made; and certain materials tended to be lower in quality than if the city were equipped to make frequent tests. Unscrupulous people had no hesitation in using inferior and sometimes unsafe materials if their personal profit was made greater thereby, and the innocent buyer or owner was often put to wholly unwarranted and often disastrous expense.

For these and other reasons the writer some time ago recommended the establishment of a laboratory by the Department. The idea was approved by the Building Commission and the Board of Finance, and $16,000 was appropriated for it. Space was provided in the subbasement of the new City Hall, in a room 61 feet long, 30 feet wide and 17 feet high. Equipment was purchased and installed, and the laboratory was put in operation.

The main piece of apparatus is a Southwork-Emery universal testing machine with a capacity of 600,000 pounds in compression, 300,000 transverse, and of 200,000 pounds in tension. It takes specimens up to 8 feet in height, in compression tests. There is a motor-driven adjustable crosshead, and the machine has a hydraulic power stroke of 12 inches. Three ranges of weighing capacity give adaptability for all forms of tests, large and small. Other equipment for the preparation and handling of specimens conveniently and for the testing of cement and other materials is installed and will be supplemented as necessity may require.

Besides testing materials for which approval is requested, the equipment is used to determine whether materials used in actual work done are in conformity with requirements. In certain months tests are made of various materials used in the city, these being done in the evening, with everyone interested urged to attend, so that architects, engineers, contractors and mechanics will be better acquainted with the physical characteristics of materials in their line of work. The Department is also ready to cooperate with building departments of other cities.

For tests other than those in connection with the inspection work of the Department itself, fees are charged depending upon the character of the tests. It is expected that these fees will in time pay for the installation cost, after which they will be reduced to an amount to cover operating expenses.

All tests made in the laboratory are open to interested persons. So far as possible the testing standards used are those adopted by the American Society for Testing Materials; otherwise the methods employed are determined by the Building Supervisor, or by any competent engineer agreed upon by the Supervisor and the applicant for the tests. In case of dispute, appeal is had to the Building Commission.

A section of the laboratory is devoted to work in connection with the electrical trades.

A bench and vertical board is completely equipped with electrical appliances of various types so arranged that different practical problems can be assigned to applicants in examinations for electrical licenses and also tests may be made of new types of equipment for which approval is requested.

Another section is allotted for plumbing work and hot-water heating apparatus. Here, too, provision is made for practical examinations of applicants for plumbing licenses. The piping is so arranged that different set-ups can be easily provided and such appliances as safety valves (both temperature and pressure), flush valves and other equipment may be tested.

The whole idea has been enthusiastically supported by those engaged in the building trades and by manufacturers. Specially built boards have been provided by a large number of manufacturers, on which are mounted hundreds of samples of various electrical, plumbing and fire-prevention equipment. These boards are hung on the walls and all are readily accessible for examination.

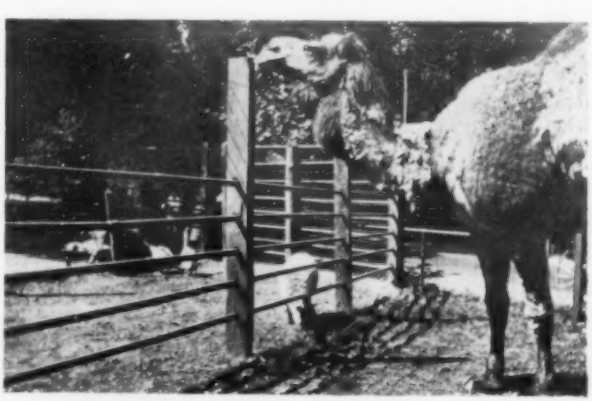
Provision has been made so that, from time to time, moving pictures may be shown in connection with new processes and materials, and every effort is being exerted to make this laboratory of the utmost usefulness not only to the Department of Building, but also to those engaged in building operations and to owners and prospective builders.

PHILIP A. MASON,
Building Supervisor.

The Zoo Introduces Barnyard Exhibits

CINCINNATI, OHIO.—Recently Cincinnati public school authorities made a striking, if pathetic, discovery: Children read of Mary's lamb, the little red hen, and other common domestic animals. Many of them had been to the zoo or circus. They knew what lions, tigers, hippos, were like. But they'd never seen a cow, a horse—some of them a pig, a goat!

The schools first sought to meet the situation by arranging with nearby farmers for classes to visit their farms. Such trips must be made when convenient to the hosts. Dates often did not fit in with the school work. Little came of the effort. The Cincinnati Zoo, therefore, has come to the relief by establishing, in a corner where children may loiter without distracting elders, a typical vignette of a farm. It is doing this in line with the policy of a number of American zoos. Signs about the zoological gardens indicate the way to the zoo farm.



THE CAMEL INSPECTS THE BARNYARD ZOO

TWO VIEWS AT THE BROOK AVENUE SCHOOL, BAY SHORE, L. I.

One end of the athletic field and a part of the cinder track; also the three tennis courts

The Cincinnati zoo farm-site is enclosed by an old-time snake-fence, or rail-fence. Near that fence is a haycock. An old hay-wagon stands beside it, and nearby is an old one-horse chaise.

Kept from the hay by a camouflaged barrier are animals commonly found on Ohio farms. There is a cow, with calf. The cow is kept by the zoo to yield milk for young monkeys, lions, and bears. There is a sow, with her litter of five or six pigs. These will be sold when grown, the proceeds to apply to financing the fence and chaise. There is a goat, with kid; spare milk is likewise sold, and is found to have an active market. There is a hen with her chicks. There are geese and ducks. The zoo can use all eggs obtainable from these, hard boiled as food for various wild animals.

The zoo farm, in brief, will more than pay its way in its yield. As young animals mature, they will be sold and replaced; a small constant surplus from this source going to the zoo funds.

Keepers wearing farmers' overalls tend the farm creatures and milk the cow daily before a group of spectators.

All children in Cincinnati public and parochial schools are taken to the zoo farm regularly in late spring. Already from 70,000 to 80,000 children are said to have visited it.

FELIX J. KOCH.

A Model Athletic Field Replaces a Swamp

BAY SHORE, L. I.—At Brook Avenue, Bay Shore, where in 1928 a dismal swamp bred mosquitoes that belabored the neighborhood, there is now one of the best and most attractive playgrounds on the south shore of Long Island. It has been developed by the Board of Education of Bay Shore on the ten-acre site of the Brook Avenue Grammar School. It comprises an athletic field with bleachers suitable for baseball, football, volleyball, soccer, outdoor basketball and field events. A quarter-mile cinder track surrounds the field, and the whole is inclosed by a galvanized chain link fence six feet in height.

Bay Shore is a resort and residential village with about 8,000 inhabitants, in the town of Islip, Suffolk County. The school district embraces the neighboring village of Brightwaters. The school facilities became inadequate, and about two years ago a bond issue of $500,000 was voted to take care of the cost of two new school buildings and their sites. It was after the buildings were completed, in the summer of 1929, that the writer was called in to devise a recreation facilities plan that would meet the requirements of the maximum number of children in the several schools.

The comprehensive layout at the Brook Avenue School was devised for use of the high school teams as well as for the teams of the three grammar schools, leaving the field at the Fourth Avenue plant entirely free for playground purposes. The school building, set far back from the road, faces Brook Avenue on the west. To the south are three tennis courts, all fenced. These have a base of six inches of cinders underneath two inches of virgin loam, all thoroughly rolled.

Parking space for 200 cars is set apart on the north side of the building, and a separate playground, adjoining the tennis courts on the south, provides for the recreation needs of 600 children. Pentaquit Brook, which runs along the eastern boundary of the school property, is spanned by a picturesque rustic bridge.

Since the ground on which the athletic field was built was for the most part heavily wooded and two feet deep in muck, 20,000 cubic yards of fill were used on the job. The field itself is four feet lower than the water table of the building, which necessitated the building of a concrete retaining wall.

A quarter of a mile of reinforced concrete roads was built on the school property. Five-foot concrete sidewalks are advantageously placed, so that the edge of the walk acts as a curb for the roadway, which is twelve feet wide. Other walks around the building are topped with bluestone. These wind through the trees and lead to the rustic bridge over the brook.

A mile of fencing was used on the property. The Anchor Post Fence Co. was awarded the construction contract as the lowest bidder. The general contractors and the contractors for the sidewalks and the rustic bridge were local men.

The approximate costs of the various items follow:

Plowing, grading, seeding, etc.	$ 9,000
Clearing, grubbing, filling, etc.	8,500
Concrete roads and walks	5,000
Concrete retaining wall	1,000
Parking spaces	1,700
Tennis courts	1,000
Track, water supply, drainage and bulkhead	5,500
Rustic bridge	1,000
Fence, tennis court enclosures and backstop	10,000

ROBERT J. BARTLEY,
Consulting Engineer, Town of Islip.

Licensing the Cat

ONE of the most common ordinances adopted in American municipalities controls the running at large of dogs and other animals. But rarely do we find any city which includes the cat under such regulations. There are, however, a few cities which require a license fee from owners of cats. Among these cities are: Coronado, Calif., Grand Rapids, Mich., Montclair, N. J., Mount Vernon, N. Y., St. Petersburg, Fla., and Seattle, Wash.

In Coronado a license fee of $1 per cat is required and it is the duty of the owners of all cats to keep them from disturbing the peace and quiet of the neighborhood. In Grand Rapids all cats must be registered by name and by a general description and a license fee of $1 paid. All cats are required to wear a metal license tag.

In Mount Vernon every person owning a cat must have it licensed and must pay a license fee of $1 for a metal tag to be worn by the cat. Any unlicensed cat may be impounded by any police or other duly authorized officer and destroyed if not redeemed within 24 hours. Any officer lawfully seizing a vagrant cat shall receive $1 for each animal.

In St. Petersburg owners of cats must have them licensed and the cats must wear a metal license tag. Any stray cat may be impounded and destroyed if not redeemed within three days by the owner. Such cat shall not be released until a payment is made of $1 for license fee, 50 cents for impounding, and 10 cents a day for each day the cat is held at the pound.

E. D. GREENMAN.

Competent Municipal Bidders

By **R. J. GOLDIE**
Vice-President, Michigan Valve and Foundry Co.

APROPOS of the old saying about the grass in the field beyond looking greener, we invariably see a general cross-migration of business hunters from one field to another when the tone of general business conditions becomes dull. At such times new faces are seen at municipal lettings. Many contractors and equipment manufacturers not regularly engaged in municipal work suddenly decide to supplement the meager volume of work in their accustomed fields by whatever they can pick up at the City Hall, regardless of what it may be.

They have one dominant urge—to keep enough work on the books to hold their organizations together. They are satisfied to forego all profit on the job if necessary. In fact, they will voluntarily bid at less than what they *guess* the cost to be until conditions in their own fields improve.

They have no intention whatever of remaining in the municipal field after the termination of the current emergency and are therefore not interested in building good-will for future benefit in the municipal field. They are there to get what they can while they can, and then forget about it. What later happens to the structures they build or the equipment they furnish is of little concern to them.

When mechanical equipment is purchased from a manufacturer on such a basis, what is to be done several years hence when repair parts or renewals become necessary? Will the manufacturer, at that time, be disposed to stop regular production of a profitable nature to fill small orders for the needed parts? And if he does, what will his price be? At that time he has ceased to cultivate municipal markets and is engrossed in his own normal operations.

If the necessary repairs are not obtainable, what then will it cost to replace the equipment entirely? What will the cost per year be of the equipment replaced? And will the taxpayer consider his initial expenditures wisely made? Orphaned equipment is expensive and extremely troublesome for the conscientious municipal executive who tries to accomplish results with the equipment assigned him.

Every experienced specification writer knows the extreme difficulty of writing a set of specifications that will definitely exclude all mediocrity in the equipment described, and he also knows the difficulty of getting the rigidity of inspection necessary to insure that the material received fully meets the specifications as written. Both of these factors facilitate the operations of the inexperienced bidder. No matter how rigid the specifications, an inexperienced manufacturer will find it practically impossible to build into a product the quality that skill and experience alone can attain.

Three Essentials—Experience, Skill, Integrity

Perhaps you will remember the advertisement several years ago which read, "The Best Car Money Can Build." Obviously, money alone does not build "the best." Has it been money or experience which has given us 1931 models? It has taken thirty years to produce today's automobile—thirty years of study, trial and error experimenting, and organized research. Money is a necessary factor, but not the priceless ingredient which puts efficiency and dependability into a product. Experience, skill and an honest desire to excel on the part of the manufacturing organization are the *sine qua non* of achievement in the making of modern mechanical products. None of these factors can normally be enumerated in the equipment of the casual bidder.

In contrast to the picture thus far outlined, consider the manufacturer who has for years given his best efforts and thrown the entire energy of his organization into the work of serving municipal needs. Municipal supply is his chosen field and will remain so tomorrow and ten years from now. He cannot make a mistake and then promptly forget it. He cannot bury his mistakes. He has to live with them and gradually live them down, which is a tedious and disheartening process.

This does not imply altruistic motives on the part of this manufacturer. He isn't altruistic, but he must be progressive. His normal competition forces him to keep abreast of development. Ordinary business judgment has taught him that his continued usefulness in the municipal field depends largely on the amount of good-will he generates. Good-will is the result of satisfaction in the use of his products over a period of years and the actual service he is able to render the user.

Conditions Which the Newcomer Must Meet

Nor is this a brief for the limitation of municipal supply manufacturers to those already in the field. Competition is essential to progress. But when a new manufacturer comes into the field, he should be able to satisfy the municipal executive of his ability and his sincere intention to continue regularly in the manufacture of the line he has initiated. He should be carefully investigated by the municipal purchaser in something more than a casual or routine manner.

The purchaser should satisfy himself that:

1. The new manufacturer has equipment applicable to the type of work he has essayed to do.
2. That he has a reputation for quality and intelligent service on the products previously manufactured.
3. That the experience gained in his previous operations is applicable and beneficial in fitting him for the new line undertaken.
4. That he has sufficient reserve capital to adequately finance the organization of his plant along the new lines.

As a matter of fact, these are all points which would be given careful scrutiny by the able purchasing agent in any modern industrial concern and they would all take precedence over the consideration of price alone. This type of purchasing agent would also want to be shown how a manufacturer new in the field could quote as low a price as the experienced firm if the quality of the merchandise considered was at least as high as that of his more experienced competitors.

Importance of a Legitimate Profit

John F. Diehl, Purchasing Agent of the Bijur Lubricating Company, says, in talking of his own organization: "When we are convinced that the new man is really quoting us a low price, we investigate him and his business carefully to see if the price he is quoting is justified by factors in his business. We do not believe in purchasing from a man who is losing money on the transaction. Unless he is making his legitimate profit, he will be unable to furnish us with the service we demand, which is frequently worth more to us than a few dollars' saving."

It may be beside the point to mention it here, but the purchasing agent of any progressive organization must have the welfare of that organization at heart. He must answer for the quality of the goods he buys, as well as for the price he pays for them. If you were a member of the board of directors of a manufacturing concern, would you make price the only criterion in your company's buying policy? Do you personally know any successful purchasing agent who does? The veteran purchasing agent has learned through bitter experience that ofttimes when he buys an article for a price that does not include a reasonable profit for the seller, his troubles multiply and the price isn't always the cost.

Latitude for the Conscientious Official

It is fully realized that the political organization cannot be managed along the same lines as the industrial organization. The municipal charter is the Alpha and Omega of municipal organization, and the charter in many cases leaves very little to the discretion of the executive. The prescribed course of action in pur-

chasing is carefully detailed and is inflexible.

There is, however, a rapidly growing volume of evidence to refute the wisdom of such ironclad restrictions, even in municipal affairs. It can be shown that the ultimate cost to every one concerned, especially the municipality itself, is more than can be saved by preventing the unscrupulous action of the occasional executive who is inclined to put his own interests ahead of the best interests of the city.

Rigid charter specifications of this kind should be and are being amended to give the conscientious city executive enough latitude to insure the perfectly obvious savings that can be made for the taxpayer in the judicious purchase of municipal supplies. An award to other than the low bidder should be accompanied by a concise report written into the public record detailing the reasons for making the award.

Disposing of the "Informal" Bid

Another serious objection to the practice of permitting inexperienced firms to bid on municipal work or supplies is the difficulty of disposing of the "informal" bid. The informal bid is the one where all bidding stipulations have not been complied with and which cannot therefore be considered by the awarding authority.

The excluded bidder promptly protests such action and is prone to resort to legal action to have all bids disqualified and a new letting scheduled. In the meantime, the bids made by the competent and conscientious bidders have been published. Every contender for the contract knows exactly what the low bid has been, and all who enter the subsequent letting are constrained to reduce their quotations to or below the previous low. Prices drop, profit vanishes, or quality suffers, and the municipality generally gets just about what it pays for.

As a matter of fact, the conscientious bidder who prizes his reputation very often refuses to enter the second letting because he does not feel that he can successfully compete with the prices which inevitably will be quoted. He refuses to cheapen his product in order to bring his price in line with theirs. There have been a great many cases of just this kind where the list of bidders in the second letting has lost the names of all the better qualified firms.

In setting down the foregoing observations, I have in mind chiefly the supply of materials requiring skilled fabrication in their manufacture. However, with practically all equipment the difficulties as outlined are met. Experience and a record for efficient service should be given full consideration in addition to price in the supply of equipment for municipal use.

How Two Municipalities Are Finding Work for Their Jobless Citizens

Man-A-Block Plan Provides Constructive Substitute for Bread Lines

BUFFALO, N. Y.—Among metropolitan cities, Buffalo in one respect is almost unique in that there are no bread lines and no soup kitchens. To Buffalonians the reason is familiarly known as the Man-A-Block Plan. To the nation at large it is known as the Buffalo Plan, which was evolved from the December, 1930, meeting of the Mayor's Committee on the Stabilization of Employment.

In November, 1930, Mayor Charles E. Roesch organized this committee comprised of business men and industrial leaders, as befits a business and industrial city, appointing as chairman the well-known industrialist, Alfred H. Schoellkopf. Its purpose was to investigate and solve, if possible, the problem presented by business depression and unemployment.

This committee set itself two objectives: "Give a Job—Not Charity" and "1,000 Jobs for 1,000 Men." From committee meetings and discussions held throughout November and December evolved the Buffalo Plan, the Man-A-Block Plan. To start the plan functioning, a subcommittee was organized, the Man-A-Block committee. At its head was placed Myron E. Forbes, formerly President of the Pierce-Arrow Motor Car Co., and a nationally known organizer and leader of men. Christmas week this committee took working quarters on the fourth floor of the Chamber of Commerce building and started in.

The day after Christmas 90,000 letters signed by Mayor Roesch, were sealed and sent out to every police precinct in the city, whence they were distributed throughout city homes. The letters explained the Man-A-Block Plan and urged cooperation of all citizens.

The plan is unique in that its success rests entirely upon voluntary cooperation of the citizenry—not upon public or civic enterprise. The plan aims to provide each city block or section thereof containing 25 or 30 families with a man to keep the walks cleared of snow, ice, slush. This man is to be paid a minimum weekly wage of $15, collected in 50-cent, 75-cent, and dollar contributions weekly by residents of the block.

Whether or not there is snow, ice or slush, the man is to be paid his minimum weekly wage of $15, and when there is no walk-clearing to be done the man does odd jobs—window cleaning, cellar cleaning, taking out ashes, and the like—for the residents of the blocks. For these odd jobs the residents may tip the man extra if they wish.

To be eligible for these jobs the man must be a resident of Buffalo; must be married and have a family; must have no other income; and must be of satisfactory character and of sufficient strength and ability for the task. The men are selected through the cooperation of the Odd Jobs Bureau created by the women's division of the Civic Unemployment Committee.

To facilitate the functioning of the Man-A-Block Plan the committee divided the city into its election districts, and for each district appointed a district major who in turn appointed block captains throughout the district. These block captains contact residents in their block, solicit their support and collect their small weekly contributions.

During the first week of its organization the Man-A-Block Plan put 100 men to work. At this writing, less than two months since the start, more than 700 men have been given jobs. And now a similar plan is under way: the Women-A-Block Plan to provide work for needy women.

JOHN WINTERS FLEMING.

Getting Down to Brass Tacks in Securing Jobs for the Unemployed

GLEN RIDGE, N. J.—Jobs for the unemployed are materializing in this borough of 7,365, by a simple process of applied psychology. Definite word pictures of sixty-odd possible improvements in living conditions, to be secured easily and at low prices, have been sketched before the imagination of householders, and the suggestions are taking hold.

The first letter sent out by the Glen Ridge Committee on Unemployment, on January 3, was in the nature of a survey: it secured information as to existing unemployment in the households of the borough and as to possible jobs to be given out by those households. A summary of this information is given in the first paragraph of the letter of February 6, reproduced on page 143. With this second letter were enclosed four mimeographed pages of Suggestions for Practical Unemployment Relief, introduced as follows:

"This list contains suggestions for many home improvements. Please read it through to the end. Check any item that interests you and upon which you would like to receive a reliable estimate. A competent estimator will examine your problem, by appointment, and will submit a bid for the work. There is no charge for this service nor any obligation to proceed. The price quoted will be lower than can be obtained under normal conditions, because these men need work at once and will give you their best efforts. If you wish to take advantage of these favorable prices, all you need to do is to act quickly.

"Return this list after checking items on which you wish quotations, or write a brief letter outlining your requirements, and mail it in the enclosed envelope to the Chairman of the Unemployment Committee."

The pulling power of the scheme lies in the definiteness, variety and attractiveness of the suggestions, which range from the usual needs, like roof and cellar repairs, and exterior and interior painting,

BOROUGH OF GLEN RIDGE
NEW JERSEY

February 6, 1931

To the Citizens of the Borough:

Responses to our letter of January 3rd have indicated that there were about fifty people in the Borough in need of employment, including laborers, building mechanics, office workers and others. Many have been out of employment for months and are nearing or have reached the end of their resources; a few women and invalids need help through work they can do at home or work that can be done in a business office, factory or store.

Through the co-operation of some of our citizens in providing work, and through public improvements authorized by the Mayor and Council as emergency relief measures, temporary work has been provided for more than a third of this number. Such public improvements as can be carried out by the Borough will be carried out, but the amount of such work that can be done at this season of the year, while the ground is frozen, is limited.

A group of about fifteen skilled building mechanics (painters, carpenters, masons, electricians, etc.) has been organized into a self-helping committee which is prepared to do building improvement or repair work under the supervision of local contractors, at rock bottom prices

A great deal of this work can be accomplished within the next month or two at a price very substantially below normal costs, and even below prices that will have to be charged after the normal Spring revival of building activity.

The enclosed list contains many practical suggestions. Please read it through carefully, and check any items on which you would like reliable estimates at prices now prevailing. An addressed reply envelope is enclosed for your convenience.

You can profit materially by having work done NOW, that you have planned to do sometime in the future, and you will at the same time be constructively helping our unemployed citizens.

Respectfully,

Frank L. Barrows, Chairman,
Herbert Edge
Harold L. Jones

Committee on Unployment.

THE LETTER TRANSMITTING THE SUGGESTIONS

33. Correct the heating of a cold room.

34. Install automatic heat control device (thermostat).

35. Correct defective fireplaces.

36. Build new fireplaces.

37. Check over entire wiring system for compliance with insurance requirements. (Note: This work will be done without cost and is for the purpose of fire safety. If defective work is found, a quotation will be made for correcting conditions).

38. Install extra electrical outlets to eliminate or reduce the need for long fixture cords, to provide for an electrical clock, for a floor lamp, for an electric iron, etc..

39. Install pilot light on cellar, laundry or garage switches.

40. Modernize lighting system - relocate fixtures, provide new fixtures.

41. Conceal all radio wiring, including aerial and ground connections.

42. Install new concealed radio wiring to permit use of extension speakers in bedroom, dining room or recreation room. (Note: The average commercial receiver will operate from two to ten extra speakers permitting use of radio for invalid or for social affairs in any part of the house without moving the receiver.)

43. Improve bell call system - door bells, maid's buzzer, annunciator system, burglar alarms, etc., e. g., by eliminating dry cells and connecting directly to the lighting system.

44. Refinish hardwood or painted floors.

45. Install new flooring - linoleum or rubber, hardwood, ceramic tile or composition tile.

46. Stop leaks in roof or wall where plaster is stained.

47. Repair defective plaster in any part of the house.

48. Weatherstrip doors and windows. (Note: You can have a standard metal strip installed at a cost of about $2.50 per window of usual size.)

49. Repair or replace hardware, correct sagging doors or defective windows.

Write your name, address and telephone number plainly on each sheet before mailing.

Name _____

Address _____ Tel. No. _____

THE THIRD PAGE OF SUGGESTED ITEMS

through glass and screen enclosures, modernization of front doors, vestibules and bathrooms, and the building of recreation rooms in basement and attic, to window-boxes, cedar-lining of closets, ventilating fans in kitchen, full-length mirrors in dressing-rooms, milk and package receivers, and concealed jewel safes. A page of the suggestions is here reproduced. Improvements to home grounds —work not requiring building trades labor—and miscellaneous home or office work are also itemized among the suggestions. By the time the possible employer has read the sixty-or-so items, he is likely to be visualizing his home improved and beautified, and to be taking action to that end.

Up to February 23, 51 replies were received asking for estimates on 128 items. The more frequent inquiries are for painting and decorating, electrical work, refinishing floors, and weatherstripping, but the inquiries cover a wide range and include 45 of the 63 items on the list.

We shall be glad to send copies of the mimeographed circular to those who request them from the Chairman of the Committee.

FRANK E. BARROWS,
Chairman, Committee on Unemployment,
Glen Ridge, N. J.

New Orleans Celebrates Mardi Gras with Light

CANAL Street, the famous central thoroughfare of New Orleans, La., which underwent a complete rejuvenation, with new pavement, sidewalks and lighting, as described in THE AMERICAN CITY for May, 1930, is the chief scene of one of America's most colorful celebrations, on Mardi Gras, the last day of the pre-Lenten carnival. Decorative effects are produced at night as well as by day, the new street lighting, surpassed in intensity by only three other cities, adding notably to the effectiveness of the festivities; and it is supplemented by special lighting at the fronts of many buildings, as shown in the accompanying photograph.

With its width of 170 feet, 6 inches, between building lines, and 128 feet, 6 inches, between curbs, Canal Street claims the distinction of being the widest main business street in the country.

A day-time view of Canal Street, showing the new lighting units, appears at page 185, in the Outdoor Lighting section.

How 92 Cities Handle Their Snow-Removal Problems

Detailed Reports from Twenty-Six States in the Snow Belt

FROM 26 states and the District of Columbia come these interesting reports showing how municipalities from the small community to the large city handle the removal of snow from their streets. Appropriations start at a few hundreds of dollars and rise to tens of thousands. Hand labor and horse-drawn equipment are used in a number of communities, while tractors, trucks, mechanical loaders and steel plows predominate.

Colorado

Boulder has a population of 11,223. No special appropriation is made for snow removal, as the cost of the work is handled with regular street-cleaning funds. According to H. C. McClintock, Director of Public Service, who is in charge of snow removal, 1¾ miles, or 90 per cent of the business district, are entirely cleared of snow from curb to curb, and 6 miles are plowed, including some of the main streets in the residential district. A Baker snow-plow and a Caterpillar tractor equipped with a grader are used.

Fort Collins, with a population of 11,400, makes no appropriation for snow removal. E. A. Lawver, City Engineer, reports that about 5 miles of streets are entirely cleared of snow and 5 miles are plowed. This work covers all the business district and 10 per cent of the streets in the residential area. Plows and scrapers are used for snow removal.

Connecticut

Hartford, with a population of 164,072, uses 18 motor-truck plows and 4 mechanical loaders to clear 22 miles of streets and plow 170 miles. Leon F. Peck, Superintendent of Streets, reports that the 1929-30 appropriation was $36,000, while the money to be used for snow removal during 1930-31 was included in the general street-cleaning appropriation of $240,000. About 22 miles of streets are thoroughly cleaned and 170 miles plowed. Ninety per cent of the 22 miles are in the business district, and 10 per cent are residential streets.

New London charges its snow-removal costs to the maintenance of streets. Courtland R. Darrow, Superintendent of Streets, reports that this city of 29,640 uses three Champion plows on Four Wheel Drive trucks, one 2-ton tractor and one Wehr grader to clear 8 miles of streets and plow 48 miles. This work takes care of the entire business section of the city.

Norwich reports, through its Street Commissioner, Herbert B. Wightman, that four auto trucks with plows attached to them take care of snow removal. No appropriation is made for this purpose, although 4 miles of streets are cleared and 25 miles are plowed. One hundred per cent of the business streets are covered and 75 per cent of the residential streets.

Stafford Springs makes no special appropriation for snow removal and has no regular snow removal equipment. The snow-plows used by the state throw the snow on Main Street into the gutters, from which it is removed and carried away in trucks. According to George Towne, Superintendent of Streets, about ¼-mile of street is cleared in this way, while 1½ miles are plowed by the state. This takes care of approximately 80 per cent of the business district and a very small part of the residential area.

West Hartford, a town of 24,941, had a snow-removal appropriation for 1929-30 of $5,000, the 1930-31 appropriation not having been made at the time of the report of B. I. Miller, Town Manager. All streets are plowed and 30 per cent of the business streets are cleared as well. Of all the streets there are 120 miles that are plowed only. Seven plows mounted on 5-ton trucks, one Caterpillar Thirty tractor with Sargent plow, and one Catepillar Sixty tractor with Sargent plow, are used.

District of Columbia

Washington does not make a special appropriation for the removal of snow. Morris Hacker, Supervisor of City Refuse, states that this city of 486,869 population uses 6 North hydraulic loaders, 30 snow-plows, 60 trucks and 30 horse carts to clear 17 miles of streets and plow 120 miles, comprising 80 per cent of the business district. No work is done on residential streets.

Idaho

Burley, with a population of 3,826, makes an annual appropriation of $300 for snow removal. William Schlick, Chairman of the Street Committee, who is in charge of this work, reports that, of the streets on which this work is done, 6 per cent are business streets and the remainder in the residential part of the city. A No. 15 Caterpillar motor patrol with 14-foot blade and extension is used.

Lewiston clears 10 miles of streets and plows 10 miles, 75 per cent of the work done being in the business district. One grader and a wooden plow attached to the front of a 2-ton Caterpillar tractor are the equipment used, according to W. P. Hughes, City Engineer and Street Superintendent, under whose jurisdiction the work is done.

Illinois

Hinsdale, with a population of 7,000, makes an annual snow-removal appropriation of $5,000 for clearing 54 miles of streets and plowing 54 miles. R. S. Hopkins, Village Manager, states that by using one Caterpillar Sixty tractor with Baker plow, all streets are taken care of.

Paris, which has a population of 8,781, does not make a special snow-removal appropriation. A. L. Simons, Street Commissioner, states that with trucks, a grader, shovels, and horses, one mile of street is cleared and twelve miles plowed, one-quarter of the streets covered being in the business district and the remainder residential.

Zion has a population of 6,000. T. H. Ferguson, Commissioner of Public Works, who has charge of snow removal, reports that a power grader and horse-drawn V-plows are used in clearing 1½ miles of cement-paved streets and plowing 45 miles of residential streets and sidewalks. No special appropriation is made for the work, the money being taken from the general fund. Approximately 5 per cent of the business streets and 40 per cent of the residential streets and sidewalks are cared for.

Indiana

Monon had a 1929-30 snow removal appropriation of $150, which has been increased to $200 for 1930-31. Edward J. Kentnich, Municipal Superintendent, reports that 6 miles of streets are plowed, no streets being entirely cleared. Wooden snowplows drawn by one horse have been used, but the town intends to purchase two steel snowplows.

Iowa

Ames, with a population of 10,261, makes an annual appropriation of $2,500 for the removal of snow. This takes care of clearing 2 miles of street and plowing 5 miles, 95 per cent of the cleared streets being in the business section of the city. John H. Ames, City Manager, who has charge of snow removal, reports that graders, tractors and small plows are used for the work.

Chariton, which has a population of 5,365, reports through Dr. H. L. Stewart, Chairman of the Streets Commission, that no special appropriation is made for the removal of snow. Only 4 miles of streets, or 50 per cent of the business district, are entirely cleared of snow, using shovels and wagons. No plowing is done.

Mason City, with 23,304 population, uses one Lessman loader, several team-drawn sleds of about 7 yards capacity, trucks, and hand loading to clear the snow from 2 miles of streets in the business district; 100 miles of business and residence streets are plowed. C. B. Patchen, Superintendent of Streets, is in charge of this work.

Kansas

El Dorado has a population of 10,311. F. E. Schide, City Engineer and Street Commissioner, who has charge of the work of snow removal, reports that very little snow falls in El Dorado and this is taken care of by trucks and men with shovels. Five miles of streets, including all the business streets and 10 per cent of the residential streets, are kept clear.

Manhattan, which has a population of 10,136, does not make any special snow-removal appropriation. Arthur J. Rhodes, City Engineer, reports that during the winter of 1929-30 they had an unusually large amount of snow, which was removed at a cost of about $1,800. All streets in the business area, about 1½ miles, are cleared and gutters and sidewalks are plowed. Trucks, shoveling by hand, and sidewalk plows are used for the work.

Salina makes no snow-removal appropriation. B. I. Chambers, Superintendent of Streets, reports that this city of 20,155 population uses one Baker snow-plow attached to a 1-ton International-Harvester truck and one 10-20 McCormick-Deering maintainer. Ninety per cent of the streets cleared are in the business area.

Maine

Bangor, which has a population of 28,749, has increased its appropriation for snow removal from $7,250 in 1929-30 to $14,050 for 1930-31. According to H. W. Wright, City Engineer, four miles of streets are cleared and 112 miles are plowed, the work covering all the business streets and 97 per cent of the residential streets. For this work one 10-ton tractor, one 5-ton tractor, four heavy truck plows and one truck-mounted blade plow are used. One of the 10-ton wooden plows has recently been replaced by a steel plow.

Gardiner, which has a population of 5,609, makes an annual appropriation of $3,000 for the removal of snow from 50 per cent of its business streets. E. B. Abbott, Superintendent of Streets, reports that one mile of streets is entirely cleared of snow and 40 miles are plowed, using two tractor plows and one truck-mounted plow.

Madison, according to George R. Cornforth, Road Commissioner, clears one mile of streets and plows 114 miles, using one FWD truck and a Mead-Morrison tractor. The sum of $3,500 annually is appropriated for this work, which takes care of clearing the streets of 50 per cent of the business district.

Portland has a population of 70,810. The 1929 appropriation for snow removal was $25,000, which has been increased to $30,000 for 1930. About 7.33 miles of streets are entirely cleared and 152.17 miles are plowed, using twenty-three snow-plows, six trucks, four tractors, one loader and two ice levelers. About 1.6 miles of snow-fence are used to prevent drifting on the highways. Edward M. Hunt, Commissioner of Public Works, reports that 87 per cent of the business streets and 13 per cent of the residential thoroughfares are cleared.

South Portland appropriated $2,500 for snow-removal work during the winter of 1929-30, but actually spent $4,000 for this work. For 1930-31, the appropriation is $3,000, and $8,300 for new

equipment, and it is expected that the work will actually cost $8,000. Albert W. Waterman, City Engineer, states that three 5-ton tractors, one Walter Snow Fighter, one 2½-ton and four 1½-ton blade plows are used for clearing 3 miles of streets and plowing 150 miles. Half of the business streets are cleared. Two 1½-ton blade plows have been added to the snow-removal equipment this winter.

Waterville, which has a population of 15,454, clears 2 miles of streets in its business district and plows 85 miles of streets, using a 10-ton Lombard plow, two 3-ton trucks with plows, and a power grader equipped with snow plow. The 1930-31 appropriation for this work was $11,500, according to E. B. Coffin, City Engineer.

Maryland

Takoma Park, with a population of 6,415, makes an annual appropriation of $500 for snow removal, with which it clears 10 miles of streets, 60 per cent of them in the business district and the remainder residential streets. The superintendent of Public Works, William F. Fischer, reports that three plows and one road grader are used.

Massachusetts

Concord made an appropriation of $8,000 for snow removal during the winter of 1929-30, and has reduced this to $7,000 for 1930-31. This is to take care of clearing all streets, 2 miles in the business district and 43 miles of residential streets. Elmer L. Joslin, Superintendent of Streets, reports that four blade plows, one V-type plow and one 10-ton Caterpillar tractor equipped with a V-type plow are employed.

Fall River spent $4,734.89 for the removal of snow during 1929, and $6,169.55 in 1930. According to Jere H. Doyle, Superintendent of Streets, 5 miles of streets, the entire business district, are cleared and 120 miles are plowed. Snow-plows, a loader and trucks comprise the equipment used.

Lexington uses 18 pieces of snow-removal equipment, mostly tractor plows and plows mounted on trucks, to clear 5 miles of streets and plow 90 miles, all the streets in the city. The 1929-30 appropriation was $7,000, but the 1930-31 appropriation had not been made when the report of William S. Scamman, Superintendent of Public Works, was prepared. He has recommended $15,000.

Newton has a population of 65,276 and made an appropriation of $40,000 for the removal of snow during the winter of 1929-30. George E. Stuart, Street Commissioner, reports that all streets in the city, 255 miles, are cleared of snow, using trucks with snow scrapers, one Caterpillar tractor equipped with a Sargent plow and Fordson tractors.

Wakefield appropriates $10,000 annually to clear 5 miles of streets in the business district and plow 70 miles of streets. Harold S. Powell, Highway Engineer, reports that this town of 16,318 population uses eight 5-ton trucks, one 10-ton tractor, one 5-ton tractor, one 2-ton tractor and three 1-ton tractors, all equipped with snow-plows, for this work.

Michigan

Gladstone, with a population of 5,170, uses two FWD trucks for plowing 25 miles of streets. One Fordson tractor is used for snow-plowing sidewalks. According to A. F. Raddant, Assistant City Manager, the annual appropriation for this work is $1,000.

Highland Park has a population of 52,959 and makes an annual appropriation of $5,000 for the removal of snow. Using two Good Roads Champion snow-plows, the city clears 12 miles of streets in the busines district and plows 30 miles of streets in the residential section. M. H. Zink, Superintendent of Public Service, is in charge of this work.

Holland has an appropriation of $8,000 for the removal of snow during the winter of 1930-31. Jacob Zuidema, City Engineer, who has charge of this work, reports that 1.75 miles of streets, the entire business district, are cleared of snow, and all residential streets, 34 miles, are plowed, using two 2-ton trucks equipped with blade speed plows.

Iron Mountain, with a population of 11,652, has an annual appropriation of $4,000 for the removal of snow. H. L. Senseman, City Engineer, reports that one mile of business streets is cleared and 60 miles of residential thoroughfares are plowed, using one Caterpillar Sixty with Wausau wing plow, one 5-ton Caterpillar tractor with Wisconsin Special wing plow, and a GMC Model T-60 truck with straight blade plow.

Lansing has a population of 78,397. The snow-removal appropriation for 1929-30 was $5,000, which has been increased for 1930-31 to $7,500. The city clears 205.85 miles of streets, the entire residential district, using one Barber-Greene snow-loader, 5 motor plows, 4 plows attached to trucks for use in streets, and 30 horse-drawn plows, according to the report of E. D. Klock, Superintendent of Public Works. Because of heavy snow in December, 1929, the expense exceeded the appropriation.

Muskegon has a population of 41,390. For the winter of 1929-30, $17,000 was appropriated for the removal of snow. This was increased to $20,000 for the winter of 1930-31. According to William C. Brown, Superintendent of Streets, three miles of streets, or 95 per cent of the business district, are entirely cleared, and 106 miles of streets in the residential district are plowed only, using one Fordson tractor, two motor graders, one Cletrac with grader blade, four truck plows and trucks with hand shovelers. Three sidewalk plows and four truck plows were added for the 1930-31 season.

Zeeland has a population of 2,850. The annual street fund, which includes the removal of snow, is $3,500. According to G. P. Rooks, City Superintendent of Streets, one Baker snow-plow is used to clear 8 miles of streets, 20 per cent in the business district and 80 per cent in the residential section of the city.

Minnesota

Brainerd appropriates no fixed sum for snow removal, according to R. T. Campbell, City Engineer. The entire business district has the snow entirely removed, and all other streets in the residential and outlying districts have the roadways plowed clear of snow. One Wehr motor grader and one 10-foot straight-blade snow-plow, driven by two 3-ton trucks in tandem, are used for plowing purposes in snow removal. In order to take up the slack in seasonal unemployment, the hauling of snow to the dump is done by teams and sleighs. The loading is done by hand labor.

Cloquet does not have a separate appropriation for snow removal, money for this work being taken from the street fund. During the winter of 1929-30, snow removal cost the city $3,750, and it is expected that about the same amount will be expended during 1930-31. One mile, or 75 per cent of the business district is cleared of snow, and 35 miles of streets are plowed, using truck and tractor-mounted snow-plows. Archie Campbell, Street Commissioner, is in charge of the work of snow removal.

Fergus Falls appropriated only $500 for snow removal for the winter of 1929-30, but this has been increased to $1,500 for 1930-31. According to Galen J. Jasper, City Engineer, this city of 9,500 clears 3 miles of streets and plows 12 miles, using one 5-ton tractor with plow and a 10-20 grader.

St. Cloud, which has a population of 21,000, set aside $3,000 for the removal of snow during the winter of 1929-30, and $2,000 for 1930-31. Two miles, the entire business district, are cleared of snow, and 130 miles are plowed. R. E. Borrowman, City Engineer, who is in charge of this work, says that they use one International 3½-ton truck with a North Star speed plow and one Caterpillar Thirty tractor with V-plow and wings.

St. Paul, with a population of 271,606, appropriated $26,000 for snow removal during the winter of 1929-30 and has increased this to $46,000 for 1930-31. Fifty miles of streets, or 75 per cent of the business district thoroughfares, are cleared of snow, and 400 miles, or approximately three-quarters of the residential streets, are plowed only. Two Snogo rotary plows, one Snow King rotary plow, and ten blade plows on trucks are used, and four blade plows are being added, according to J. R. Johnston, Assistant Superintendent.

Nebraska

Fairbury has a population of 6,200. Snow removal is not a very serious problem here, and the work is done partly to aid unemployment. R. B. Boals, Light and Water Commissioner reports that men using hand shovels and loading into wagons clear 6 miles of streets, the entire business district, and 20 per cent of the residential streets.

New Hampshire

Berlin, which has a population of 20,018, has a street maintenance fund of $84,000, from which money is taken for snow removal. Francis L. Brannen, Commissioner of Public Works, who is in charge of this work, reports that 4 miles of streets are cleared and 41 miles are merely plowed, using three truck-mounted plows, one Champion truck plow, one 10-ton Caterpillar tractor with a Sargent plow, one Fordson tractor with a Sargent snow-plow and 10 horse-drawn sidewalk plows.

Nashua has a population of 31,463. The annual snow-removal appropriation is $10,000, which takes care of plowing 110 miles of streets. William H. Tolles, Highway Commissioner, reports that two Fordson tractors with Sargent plows, one 10-ton Caterpillar tractor with Sargent plow, and four Mack trucks equipped with snow-plows, comprise the equipment used.

New Jersey

Belleville has a road appropriation for repairs, construction, street cleaning and snow removal of $30,000 annually. According to Albert S. Blank, Town Engineer, 40 miles of streets, or 15 per cent of the business district, are plowed, using two Baker and three Champion plows attached to 5-ton trucks, and one small tractor-mounted plow.

East Orange appropriates $85,000 per year for cleaning streets and removing snow. No separate item is set aside for snow removal, which costs approximately $10,000 annually. W. D. Willigerod, City Engineer, reports that 3 miles of streets are cleared and 71 miles plowed, using two mechanical loaders and ten truck-mounted snowplows.

Newark makes no appropriation for snow removal until the end of the winter season, the 1929-30 appropriation having been $59,129.17. Goline Doremus, Deputy Chief Engineer, Department of Public Affairs, who is in charge of snow removal in this city of 442,337 population, reports that 25 miles of streets are cleared and 330 miles are plowed, using 101 Mack trucks equipped with plows and 23 snow-loaders. Two sand spreaders are used on the streets in slippery weather.

Ramsey, according to Otto Saalfeld, Superintendent of Public Works, clears 18 miles of streets, using one Stark plow. No special appropriation is made for snow removal in this borough of 3,200 population.

Ridgefield Park has a population of 10,764. For the winter of 1929-30, the snow removal appropriation was $1,900, while for 1930-31, it is $1,000. Edward Hoeverman, Supervisor of Public Works, reports that the entire 25 miles of streets in the town are cleared, using two Walter snow-plows, one Nelson loader and two Ford trucks.

Summit, with a population of 14,556, appropriates $6,000 annually for clearing 4 miles of street and plowing 40 miles. Fred Mort, City Supervisor, who is in charge of this work, states that he uses six plows and one Nelson snow-loader, with three trucks for hauling the snow away.

Tenafly has a population of 5,669 and, according to William R. Smith, Commissioner, uses Good Roads snow-plows mounted on trucks, and men with shovels loading into trucks, for the removal of snow. One mile of street in the business section is cleared and 50 miles of streets are plowed. The 1929-30 appropriation was $500, but during the winter 1930-31 the money will be taken from the emergency fund.

New York

Endicott uses three Good Roads straight-blade plows, mounted on village-owned dump-trucks for clearing one mile of streets in the business district and plowing 15 miles of residential streets. According to C. Franklin Hunt, Superintendent of Public Works, $2,500 is set aside for this work annually. This amount includes the cost of hauling ice and snow away from business sections.

Garden City makes no special snow-removal appropriation, taking the necessary money from the Street Department budget. The village, a residential suburb of New York City, has practically no business section and clears 47 miles of streets and plows 60 miles, as well as clearing all sidewalks with horse-drawn wooden plows. C. R. McKay, Superintendent of Public Works, is in charge of snow removal, which is accom-

VAMPIRE AUTO KILLS WORKER; DRIVER CAUGHT
Aged Man Dies Instantly in Eleventh St. Crash.
Continued From Page One.
broadcast sent several radio squad cars to the scene, and a citywide search for the death car and its driver was launched.
Runs Down Boy of 13.
Meanwhile, however, Brandt was already involved in his second accident. At Eleventh and State sts., three blocks south of the scene of the fatality, his machine ran down Jack Morrell, 13, of 1611 W. Jefferson av.
was crossing the street
Koutroules,
HIT AND RUN AUTOIST KILLS AGED MAN, THEN CAREENS INTO YOUTH
When Boys Find Victim's Glasses Under After Wild Ride to County Emergency Hospital.
His victim's spectacles, lodging on the running board of the death car, led to identification of a hit-and-run driver last night after his machine had fatally injured an aged pedestrian and struck a 13 year old boy three blocks beyond and struck a 13 year old boy three blocks beyond
Trapped by that unusual circumstance, the driver, Brandt, 48, of 258 Eleventh st., was held at central station
dt, 48, of 258 Eleventh st., was held at central station
he night after questioning by
A. J. Murray of the traffic
au.
hough he steadfastly maintained he did not know he had
ruck his first victim, Brandt will
e taken before the district attorey Tuesday and probably will face
a serious charge. Captain Murray
declared the prisoner admitted he
ad taken some drinks, and a police
rgeon's examination bore out this
ement.
Ignored Arterial Sign.
The dead man was Theodore Stern, 68, a widower living at 385 Eleventh st. with a sister-in-law, Mrs. Thomas Doran. He had finished his day's work in the barns of the Gridley Dairy company, where he had been employed for and was on his way home.
Injuries Not Serious
At the hospital it was Morrell had only been bruised. But the other cussing the accident with Popper and Lawrence Schalla of the No. 3 ambulance informed of the Stern a few minutes previously. ambulance had been called ease.
Speculating as to the Brandt was the driver down Stern, the boys car more closely. The radiator caved in, Koutroules saw the the running board.
Their suspicions aroused; the boys ran tion. Motorcycle Schalla was sent to arrested Brandt.
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plished with trucks equipped with pusher plows, and Cleveland tractors with V-shaped plows attached.

Gloversville had a 1929 appropriation of $5,650 which was increased to $6,000 for 1930. Three miles of streets, 75 per cent of the business streets are cleared of snow and 50 miles are plowed. H. J. Hanmer, City Engineer, reports that the city uses two tractors with Sargent plows, three trucks and one road grader with Good Roads plows.

Hudson has a population of 12,000. The 1929-30 appropriation for snow removal was $1,200, and this has been increased to $1,500 for 1930-31. This sum takes care of clearing one mile of streets, approximately 75 per cent of the business district, and plowing about 5 miles. J. McClure Wardle, who is in charge of the work, uses a snow-loader and plows mounted on trucks loaned to the city by the Columbia Co., for the heavier snowfalls; for the lighter snows the removal is done by hand with city and hired trucks.

Ilion reports through A. M. Sterling, Superintendent of Public Works, Division of Streets and Sewers, that snow-removal work for 1929-30 cost the city $3,497.74. Based on this figure, the city has made an appropriation for 1930-31 of $4,000 to take care of this work. About 3½ miles of streets are entirely cleared of snow, and 21½ miles are merely plowed. The cleared areas include all of the business district, all street intersections and streets in front of churches, lodges, etc. Two Tri-Utility Acme graders with snow-plow attachments, and one Cletrac with Baker plow, are used.

Ithaca does not have very much snow, the 1929-30 appropriation for snow removal being only $1,500. According to Frank H. Feller, Superintendent of the Board of Public Works, one wing plow with 5-ton Caterpillar tractor and two Baker plows attached to motor trucks, are used to clear the streets.

Lackawanna takes money for snow-removal work from its general fund. Snow is cleared from 5 miles of streets in the business district, and 37 miles of residential streets are plowed, using one Caterpillar tractor with a Sargent snow-plow and one International truck with snow-plow attachment. B. A. McDonnell, Commissioner of Public Works, is in charge of snow removal.

Mechanicville makes an annual appropriation of $1,500 for snow removal, clearing 3 miles of streets and plowing about 7 miles. Frank G. Ferris, Commissioner of Public Works, reports that a road grader with wing attachment is used for this work, the snow being pushed to the gutter. In the business section it is loaded into trucks and dumped into the Hudson River, while on residential streets the snow is piled in the center of the roadway, leaving a driveway on each side. Snow is removed entirely from street intersections.

Ogdensburg, which has a population of 17,000, appropriated $7,500 for snow removal during the winter of 1929-30, and $5,000 for 1930-31. Three to six trucks and two tractors equipped with plows are used in clearing 35 miles of streets and plowing 32 miles, according to Charles H. Lord, City Engineer.

Ossining, a city of 15,241 population, makes an annual appropriation of $5,000 for snow removal. Four plows attached to trucks are used to clear 2 miles of streets and plow 26 miles. F. D. Grannis, Superintendent of Streets, is in charge of the work.

Rochester, which has a population og 328,132, appropriated $90,000 for snow removal in 1929-30 and increased this to $92,500 for the winter of 1930-31. Snow is removed from 409 miles of streets, the entire mileage of improved thoroughfares, using Champion blade plows, Barber-Greene snow loaders, Caterpillar tractors and Bashford Special plows. Edwin A. Miller, Supervisor of Maintenance, is in charge of snow removal.

Tarrytown clears its entire business district, which consists of one mile of street, and plows ten miles, using two Sargent snow-plows and one Baker plow, according to Edward A. Nichols, Superintendent of Public Works.

Walden, which has a population of 4,280, makes a yearly appropriation of $1,500 for snow removal. Approximately 18½ miles of streets are cleared of snow, and 18 miles are plowed. Richard E. Baird, Village Clerk and Superintendent of Streets, reports that one Mack truck equipped with a Baker plow and one snow-loader are used.

Watertown has a population of 32,205. The expenditure for snow removal during the winter of 1929-30 was $25,135.34, and an appropriation of $17,500 has been made for 1930-31. On 5 miles of streets in the business district the snow is pushed to the curb with plows and then shoveled by hand labor into trucks or railroad or street flat cars. About 75 miles of streets are plowed, according to the report of Charles M. Getman, Superintendent, Public Works Department. Included in the above expenditure of $25,135.34 is the hand shoveling of all bridges, sidewalks around parks, cleaning snow from alleys and cleaning crosswalks at all street intersections; also drying sand, dusting and sanding inclines, intersections, crosswalks, bridges and safety zones, opening catch basins, cutting gutters and ruts, erecting snowfence and repairing all plowing equipment.

North Carolina

Durham has a papulation of 52,037. H. W. Kueffner, Director of Public Works, reports that $500 per year is appropriated for snow removal from 70 miles of streets. Tractors and road machines and one LaPlante-Choate snow-plow are used.

Ohio

Bellefontaine, which has a population of 9,543, does not make any special snow-removal appropriation. W. Craig Zearing, Director of Service and Safety, reports that five miles of streets in the business section are cleared by hand labor, shoveling the snow into dump-trucks. The city owns four plows, which are used only for sidewalk work.

Columbus, with a population of 290,564, clears 10 miles of streets in its business section, using Baker plows mounted on trucks, and a motor-drawn sand spreader for slippery streets. Earl W. Fornof, Chief Clerk, reports that no special snow-removal appropriation is made.

Lakewood has a population of 70,509. No special snow-removal appropriation is made, this being taken care of through the street-cleaning fund of $18,000. Approximately 12 miles of streets are plowed after each snowfall, using Baker plows attached to trucks, according to Edward C. Sargent, Commissioner of Streets, who is in charge of the work.

Oberlin makes an appropriation of $500 for snow removal. This city of 4,292 population clears one mile of streets in the business section and plows sixteen miles, using one grader and trucks, according to L. A. Sears, City Manager.

Oregon

McMinnville had a 1929-30 appropriation of $300 for snow removal. No appropriation is being made for 1930-31. One snow-plow attached to a flusher is used to clear the 20 miles of streets in this city of 2,917 population, according to Ed. Peterson, Street Supterintendent.

Pennsylvania

Edgeworth, according to H. F. Burkholder, takes the money necessary for snow removal from its street-cleaning fund. Nine miles of streets are plowed, using sidewalk and gutter plows.

Ford City, which has a population of 6,127, does not have any special snow-removal equipment, using trucks loaded by hand to remove snow from a small portion of the streets in the business section, according to A. E. Mohney, Secretary of Council.

Lansdowne uses one plow, with which it clears 5 miles of streets and plows 10 miles, $500 being appropriated for this work, which is in charge of F. B. Titus, Borough Manager.

South Coatesville takes money for snow-removal work from its street-cleaning budget. Less than ½ mile of street in the business section is cleared of snow, and six miles are plowed, using a single-blade Champion snow-plow mounted on a truck, according to the report of Wm. C. Emigh, Borough Engineer.

Washington, which has a population of 24,545, plows only 20 miles of streets, using a motor grader. No appropriation is made. C. A. Shroutz, Superintendent of Streets and Public Improvements, is in charge of the work.

Rhode Island

Barrington has an annual snow-removal appropriation of $2,500, with which it clears 80 miles of streets throughout the town. Viall Stanley, Superintendent of Streets, reports that snow shovels and motor trucks equipped with Champion plows are used.

Cranston, which has a population of 42,911, does not entirely clear any of its streets of snow, but plows approximately 300 miles, using eight snow-plows mounted on trucks, according to Elton F. Durfee, City Engineer and Highway Surveyor.

Providence uses double teams, graders, truck-mounted snow-plows and three mechanical loaders to clear 14 miles of streets and plow 275 miles. Robert D. Spencer, Superintendent of Streets, reports that the annual appropriation is $30,000.

South Dakota

Lake Preston, according to the report of Otto D. Thorsner, Street Commissioner, plows only 4 miles of streets, using a Case tractor with snow-plow attachment.

Mitchell clears 2 miles or 50 per cent of the business streets, and plows 8 miles, using a Chase plow and tractor. Trucks are used for removal of the snow. Clarence J. Black, Street Commissioner, is in charge of this work.

Vermont

Newport does not make any definite snow-removal appropriation. No streets are entirely cleared of snow, but 30 miles are plowed and curb lines in the business district are cleared. Trucks and hand shovels do most of the work, and some scrapers are used to remove the snow to vacant lots, according to the report of S. J. Bailey, Assistant Superintendent of Streets and Water. The city has a Model I. Sargent snow-plow, mounted on a 40-ton GMC truck, and also a Wehr grader powered with a McCormick-Deering tractor and with Trackson crawlers. The streets are kept plowed 100 per cent for automobile traffic.

Washington

Pullman makes an annual snow-removal appriation of $4,000 for clearing 14 miles of streets and plowing 3 miles. C. M. Hooper, Water and Street Commissioner, is in charge of the work in this city of 3,322 population.

Walla Walla clears 2½ miles of streets, its entire business district, using one Baker truck-mounted plow, one tractor and a grader. All sidewalks in the residence district, approximately 60 miles, are cleared by eight horse-drawn sidewalk plows. Grove C. Cookerly, City Engineer, reports that a $500 appropriation is made for this work.

Wisconsin

Elkhorn, with a population of 2,340, takes money for snow-removal work from its general fund. Approximately 29 miles of streets are cleared and 7 miles are plowed, using one Gilbert power grader. Thomas O'Keefe, Superintendent of Streets, is in charge of the work.

Madison, which has a population of 57,899, had a 1929-30 appropriation of $45,000, which was increased for 1930-31 to $50,000. About 15 miles of streets are cleared and 90 miles plowed. High-speed plows attached to trucks and tractors are used for plowing, and a Barber-Greene loader for clearing the streets in the business district, according to the report of E. E. Parker, City Engineer and Commissioner of Streets.

Neenah clears the entire mile-and-a-half of its business streets and plows 70 miles of streets in its residential district. Martin R. Wachholz, Superintendent of Streets, reports that the 1929-30 appropriation was $3,000, and the 1930-31 appropriation $3,500. One Wausau plow on an FWD truck, two V-type plows pulled behind a motor truck, and one one-way plow mounted in front of a truck, comprise the equipment used.

Oshkosh makes an annual appropriation of $18,000 for clearing the 12 miles of streets in its business section and plowing 110 miles of residential streets. According to the report of George F. Oaks, Councilman, three Gettlemen plows, one Fordston tractor and one road grader are used for the work.

Wyoming

Sheridan, which has a population of 8,536, has very little snow. All sidewalks are plowed after each snowfall, because of the school children. Four blocks in the business district are entirely cleared of snow, and the amount of plowing necessary each winter totals about 270 miles, according to James Rennie, Street Foreman.

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Highway Location Receives Special Attention at A. R. B. A. Convention

THE spread of topics on highway location at the January convention of the American Road Builders' Association in St. Louis was exceedingly wide, covering such items as "Classification of Highways," "Right-of-Way," "Visibility," "Grade Crossing," "Bridges and Culverts," "Spur Roads," "Distribution of Construction Costs," "Allowable Gradient for Highways," and "Highway Curves." Only the more important and more unusual subjects will be mentioned in this review.

CLASSIFICATION OF HIGHWAYS

H. D. Palmore, State Highway Engineer of Kentucky, subcommittee chairman, sounded a popular note in preparing a suggested classification of highways based primarily on the estimated traffic volume. The fact that the minimums adopted are higher than those used by many states indicates the recognition of future traffic growth. The general adoption of these standards, in taking enough to care for anticipated increases, should do much to reduce eventual "taking costs." The committee wisely made no attempt to set limits for "superhighways," or "boulevards" carrying traffic in excess of 5,000 vehicles a day. It stated that each one should be considered independently in view of the kind and nature of traffic using it and the importance of the localities which it served. In recognition of the fact that the capacity of highways is limited by their intersections, the committee recommends that this type of highway have no grade crossings in order that continuous movement may be possible at all times. The following table gives the specifications for highways having from 500 to 5,000 vehicles a day.

Items	Class A	Class B	Class C
Traffic volume (per day)	1,000-5,000	500-1,000	Less than 500
Minimum width (ft.).. (Right-of-way)	80	70	60
Minimum surface (ft.).	20	20	18
Maximum grade (per cent).....	6	6	8
Maximum curve (deg.).	10	12	20

Ten-foot lanes and throat widening at intersections are recommended.

VISIBILITY

In establishing visibility standards subcommittee chairman H. R. Moffit, Location Engineer, Pennsylvania Department of Highways, used practically the same classification as the above. The following sight distances were recommended:

(1) For all highways carrying 1,000 or more vehicles a day, 600 feet; (2) for three-lane highways, 1,000 feet; (3) for two-lane roads carrying from 500 to 1,000 vehicles a day, 400 to 500 feet; and (4) for two-lane roads carrying less than 500 vehicles a day, 300 feet.

The committee also points out that better vision should be provided initially for vertical curves than for horizontal curves, since the latter may be improved at a later date by moving back buildings, etc. Another reason is that on vertical curves low objects cannot be seen as soon as higher ones.

Attention is also called to the fact that curves must be modified in accordance with the country. Motorists who have been traveling over a flat country at high rates of speed do not expect the sudden sharp curves which they might be expected to find in winding hilly roads.

GRADE CROSSINGS

H. O. Schermerborn, Engineer of Bridges and Grade Crossings, State Highway Department of New York, the subcommittee chairman, points out that in measuring the importance of grade separations the economic and delay losses should be considered in addition to safety, although the latter remains the more popular reason.

The main points brought out by the committee were as follows:

1. No plan should be authorized which has not received the approval of (a) the recognized body entrusted with its operation and maintenance; (b) the State Highway Department, and (c) the railroad corporations involved.

2. No plan should be followed which does not provide operating conditions at least as satisfactory as those existing before.

3. Cost division should be fixed.

4. Sight distances should be at least 500 feet and preferably 1,000 feet, and any decrease in this should be compensated by an increase in the width of the highway.

5. Grades should not exceed 4 per cent in flat country or 5 per cent anywhere.

6. Tangent alignment is important, and a radius of at least 1,500 feet is desirable, while 800 feet should be the absolute minimum.

7. Center columns should never be used.

8. Drainage by sumps and pumping is in the experimental stage and should be avoided if possible.

9. Vertical clearance of 13 to 14 feet should be provided.

10. Crossing spans should be two, four or six lanes in width and not of three- or five-lane widths.

11. Grade separations should be esthetic, but not at the expense of operating conditions. The subway generally presents a more pleasing structure than does the overhead construction of the highway.

12. Some index number is suggested for measuring the danger.

SPUR ROADS

Subcommittee chairman Charles F. Boehler, Engineer of Design, Michigan State Highway Department, sounds an optimistic note in favor of so-called "townless highways" and by-passes. According to him, many municipalities which formerly wanted through traffic upon their main streets for purposes of "advertisements" and "more business" now realize that through traffic which does not wish to stop and is delayed unnecessarily gives the city a bad reputation and that, furthermore, the elimination of this traffic from the main streets will permit parking regulations more favorable to the merchant.

The committee points out that beltlines, by-passes and cut-offs, to be effective, must serve local as well as through traffic. The necessary connections to the central business district are classed as "spur roads" and should be considered as a part of the trunkline system.

ALLOWABLE GRADES

C. H. Purcell, California State Highway Engineer, sub-committee chairman, points out that the improved vehicles of today have so much power that the problem is not to provide grades which can be climbed, but grades which provide safety and the efficient use of such power. The committee states that automobiles will efficiently climb sustained grades of 7 per cent, and trucks 3 per cent. Grades in excess of 7 per cent should be avoided for safety reasons, grades of 6 per cent are preferable for general use, and for sustained grades on first-class roads 5 per cent is the desirable maximum.

Traffic Devices and Their Application

UNDER the chairmanship of Harry E. Neal, Traffic Engineer, Ohio State Highway Department, a joint committee on "Traffic Devices and Their Application" of the American Road Builders' Association and the American Association of State Highway Officials has been studying the present status of the manufacture and use of traffic signs and signals. The conclusions arrived at after a study of data received from 36 state highway departments and from many manufacturers of traffic devices were presented in a report to the American Road Builders' Association convention in St. Louis in January, 1931, are summarized below:

1. *There is practically no uniformity in the design, construction or use of traffic devices.*

In substantiation of these statements the committee reports that, even in the case of the standard "Stop" sign, more than one-quarter million different types of the standard sign are possible, making it impracticable for manufacturers to produce this sign in quantities for stock. Not all of these differences are such that they produce confusion in the mind of

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the motorist, but all add to the cost of production and maintenance.

2. *Development and use of traffic devices have been based upon opinion and not upon sufficient factual investigation.*

The committee quotes from the report of the Third National Conference on Street and Highway Safety, held in 1930, which found that it had "been seriously handicapped by the lack of authoritative and comprehensive data on many vital phases of the traffic, transportation and safety problems."

3. *Unified effort upon the part of all those affected by the traffic problem is necessary if these conditions are to be corrected.*

In the opinion of the committee, the remedy lies "in exhaustive and continuing research of traffic problems in their entirety, and this research requires a coordination of effort to the end that suitable universal standards be related to the requirements of city and rural traffic."

The committee recommends "the creation of a research group or foundation, national in scope and representative of the various interests involved, the function of which shall be to conduct, direct, coordinate and evaluate factual investigations of the various aspects of the traffic problem in cooperation with the interests which it represents," thus endorsing the similar resolution introduced by the editor of THE AMERICAN CITY at the Third National Conference on Street and Highway Safety, and approved by the Conference.

The committee further suggests that the American Association of State Highway Officials authorize a group to formulate and recommend a plan for the creation of the proposed research group, or to develop some other satisfactory and workable method so that the desired end may be obtained, this work to be carried on in conjunction with the activities of other national organizations working towards the same objective.

Unemployed Assist in Traffic Survey

THREE hundred and forty men, recruited from the ranks of the unemployed, began "feeling the pulse of Philadelphia's traffic" on February 3, under the direction of Burton W. Marsh, Traffic Engineer. Supplementing the work of the field men, thirty others, several with engineering degrees, are analyzing and graphing the data collected.

The services of these men are being contributed by the Philadelphia Committee for Unemployment Relief, without whose help the survey would have been impossible, according to Mr. Marsh. All the men are being paid $4 a day and are working three days a week, so that as many men are being aided as possible. For the present the force is concentrating upon surveys of intersections at which traffic signals have been requested.

Mr. Marsh states that the data so gathered will be invaluable to his department in their efforts to improve traffic conditions in Philadelphia. Upon results already obtained, according to Mr. Marsh, it is apparent that about two-thirds of the requests for traffic control devices at street intersections are not warranted by the facts.

International Interest in Institute of Traffic Engineers

IN the short time since the organization of Institute of Traffic Engineers, it has succeeded in arousing some degree of world-wide interest in traffic engineering. The Secretary reports that inquiries for information regarding membership requirements have been received from engineers in Italy, England, Australia, Sweden and Canada.

Railway Grade Crossings and Highway Intersections

DISCUSSING the railway grade-crossing problem, the Committee on Railway Grade Crossings and Highway Intersections of the American Road Builders' Association, R. H. Baker, State Highway Commissioner, Nashville, Tenn., Chairman, emphasizes the fact that the number of crossings is steadily increasing, despite a growing program of elimination, and concludes that a satisfactory solution of this problem will not be obtained by any one method. The ultimate solution must embrace the scientific elimination of grade crossings by grade separation of road relocation, together with a greater use of grade-crossing protection.

The conclusions of the committee with respect to this point are:

1. There should be a definite classification of railroad grade crossings based on the relative value to the traveling public of their elimination.

2. There should be a definite annual program by each railroad in each state for the elimination of grade crossings of highest classifications, when such a program would not menace the financial stability of the carrier.

3. Authority to create new railroad crossings should be restricted to the state utility commission.

4. There should be a definite progressive program in each state for installing protective measures of standardized type.

5. Cost of elimination and installation of protective measures should be shared by railroads and interested parties.

For the facilitation of traffic and the protection of street users at intersections the committee reiterates the necessity for a careful traffic survey before the adoption of a system of traffic control signals or the use of other regulatory measures. Much criticism has been aimed at the existing systems, because of their inefficiency in operation, and the whole subject of traffic control signals and traffic regulation must be given much further study.

On rural highway systems, the economic advantages gained by grade separations do not often justify the extremely high cost. Standardized protective measures, the report states, will provide the necessary safety requirements on a large part of the rural highway system. Where grade separations are thought to be warranted, however, detailed economic studies should be made of the cost of the delays resulting from existing conditions, which when capitalized, provides a fair guide to the amount which may justifiably be expended on the project.

Membership Applications

THE following have applied for membership in the Institute of Traffic Engineers since the meeting of the Board of Direction on January 21, 1931:

Major John P. Hallihan, Chief Engineer, Rapid Transit Commission, Detroit, Mich.

K. M. Hoover, Traffic Engineer, Brooklyn & Queens Transit Corporation, Brooklyn, N. Y.

Donald M. McNeil, Assistant Traffic Engineer, Pittsburgh, Pa.

L. W. McIntyre, Traffic Engineer, Pittsburgh, Pa.

Fritz Malcher, Traffic Consultant and Town Planner, 114 East 37th Street, New York.

L. E. Peabody, Economist, U. S. Bureau of Public Roads, Washington, D. C.

W. F. Rosenwald, Maintenance Engineer, Minnesota State Highway Department, St. Paul, Minn.

Traffic Engineer Appointed in Kansas City

THOMAS J. SEBURN has been appointed City Traffic Engineer of Kansas City by Matthew F. Murray, Director of Public Works. Mr. Seburn has been Traffic Engineer for the Kansas City Public Service Company since 1926 and acted as Assistant Engineer during the recent traffic survey conducted by Dr. Miller McClintock in Kansas City.

Dr. McClintock recommended, in the survey report, that a traffic engineering office be established in the Public Works Department, and much of the survey and engineering work in connection with the ten-year improvement plan recently started in Kansas City will be under the jurisdiction of the new office.

Mr. Seburn is a graduate of the University of Michigan, having come to Kansas City in 1926 from Toledo, Ohio.

Other Recent Appointments

MAXWELL HALSEY

Announcement has been made by A. A. Beha, General Manager of the National Bureau of Casualty and Surety Underwriters, of the appointment of Maxwell Halsey as Traffic Engineer for the Bureau, with headquarters in New York. For several year prior to his appointment Mr. Halsey had been Traffic Engineer for the state of Massachusetts. He received his training and the degree of B.A. from the University of California, and from Harvard University, where he held a fellowship in the Albert Russel Erskine Bureau for Street Traffic Research and completed three years' graduate work, receiving his M.A. Mr. Halsey has been identified almost continuously with Dr. Miller McClintock and the latter's traffic surveys of Los Angeles, Chicago, Boston and the state of Massachusetts, also served in the Pittsburgh Traffic Survey under Burton W. Marsh. He is the author of several articles on traffic in current publications

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and has given numerous addresses before national and regional conferences.

This appointment is significant of the expansion of the traffic problem and the effort made to solve it. The progression of traffic engineering activities from the city to the county, to the state and to national business organizations indicates the areas and interests which are directly affected by the accident and congestion problems. Those who have followed the field will remember the appointment a year ago of Hawley G. Simpson, well-known traffic engineer, as Research Engineer for the American Electric Railway Association, another interest directly affected by traffic. It is anticipated that in the future all areas and organizations that feel the pressure of traffic will establish traffic engineering agencies.

CLARENCE P. TAYLOR

Announcement has been made that Clarence P. Taylor has been promoted from assistant to Traffic Engineer for the Department of Public Works of the Commonwealth of Massachusetts. He assumed control on the first of this year. Mr. Taylor has an engineering degree from the University of California, where he also received traffic training under August Vollmer, being in charge of the Police Department's traffic work in the city of Berkeley. He also spent two years in the Harvard Engineering School, holding a fellowship in the Albert Russel Erskine Bureau for Street Traffic Research, where he received a Master's degree. He has recently prepared a "Traffic Officer's Training Manual," published by the National Safety Council. Mr. Taylor had been assistant to Maxwell Halsey, Traffic Engineer, for over two years, and is well qualified to carry out the duties of that office. It is hoped that other states will attack the traffic problem in a scientific manner by establishing traffic engineering organizations of a similar character.

THE TAXPAYER'S DOLLAR

A Monthly Department of Budgeting, Assessment, Taxation, Accounting and Other Phases of Municipal Finance Conducted by A. E. BUCK, National Institute of Public Administration, New York

Suggested Improvements of Assessment Methods in New York State

SPEAKING before the New York Horticultural Society at Rochester, Mark Graves, State Tax Commissioner, recently proposed some far-reaching changes in the local tax machinery. He said that in every city, town and village of the state there were one or more assessors going around every year and assessing property, even though there had been no perceptible change in valuation. He is of the opinion that in many of the rural counties and towns the annual assessment of property could be discontinued and the property assessed once in two or three or five years, with an annual correction of the roll.

Mr. Graves pointed out that in some of the villages there were village assessors who made another assessment of the property after the town assessors had completed theirs. He thought this was a useless duplication. "We shall get better assessments and better administration of our general property tax at a lower cost," he said, "if we centralize in county units the assessment, the levying, and the collection of taxes." Such a proposal, Mr. Graves said, was pending in Westchester County, and he hoped it would succeed.

Salary Standardization Up Again in Philadelphia

THE Philadelphia Bureau of Municipal Research reports that J. L. Jacobs & Co., of Chicago, has just completed a salary standardization study in that city. This is the first attempt in ten years to remedy a situation which has long needed some definite action. The Bureau fears that the Jacobs report will be pigeonholed, valuable as it is, since the City Council has shown no inclination to provide money for its publication and distribution.

If the Jacobs recommendations are put into effect, it is estimated that there would be an actual saving of at least $250,000. This would come about mainly by the starting of new employees at the minimum rates, as they should be. The Bureau says the Jacobs recommendations, if adopted, would correct existing inequalities in paying for similar work and establish the principle of equal pay for equal work, which would have a very salutary effect on the morale of the city employees.

Debt Repudiation by Municipality Passed on by Florida Supreme Court

DURING the Florida boom, the city government of Sanford sold bonds, secured as to principal and interest by its power of taxation, and applied the proceeds to an extensive public works program. The boom collapsed. Last July the city defaulted on the payment of principal and interest on its bonds. The City Commission failed to make provisions in the budget for the fiscal year beginning October 1, to meet the defaulted and accruing obligations on the bonds. The bondholders applied to the Supreme Court of Florida for a writ of mandamus to require the City Commission to re-levy taxes so as to provide for all due and past due interest requirements to July 1, 1931. The City Government interposed a plea of "too poor to pay."

The Supreme Court ordered the increased tax levy asked for. In so doing, it pointed out that a legal contract cannot be invalidated "because it imposes a heavy burden on one of the parties to a suit." This would destroy the sanctity of contracts, making them "nothing more than the shadow of the substance." It would put all contracts in the class of "a mere social amenity, their enforcement resting solely on the whim or caprice of the obligor." The Court discussed the practical effects of debt repudiation as follows: "If the obligor rather than the Court is to adjudicate the question of when or whether or not the obligation of his contract may be enforced, then there is no such thing as the inviolability of contracts, and the stain of repudiation is on every government entity in this state. Our credit and integrity at home and abroad would be destroyed and no worthy enterprise could borrow a dollar. The aggravated effect of the boom, the fly quarantine, the hurricane and other misfortunes that have befallen us would not be comparable to the situation thus created."

The Debt Situation in Kansas City, Kans.

M. W. DE WEES, Director of the Kansas City, Kans., Bureau of Governmental Research, has recently issued a report on the general bonded debt of his city, of the local board of education, and of the surrounding county. This report presents a careful analysis on 54 mimeographed pages of the debt situation in these local governmental units.

Mr. DeWees, as a result of his debt analysis, recommends that the city and county governments adopt the pay-as-you-go policy in financing permanent improvements and a ten-year financial program as a means of budgeting these improvements. He suggests that these governmental units incorporate the moneys derived from the sale of bonds in their budgets, so that the expenditures from these moneys will receive the same scrutiny as the regular annual expenditures. He condemns the use of the bond moneys to finance current expenditures or to fund deficits as has been the practice in the county government. He advises that the county adopt an adequate accounting procedure in administering its debt and that it formulate a definite plan of retirement. Finally, he recommends that the term of any bond issue be determined by the ability of the taxpayers to pay rather than by the life of the improvement, except that the term of the bonds should not exceed the contemplated life of the improvement.

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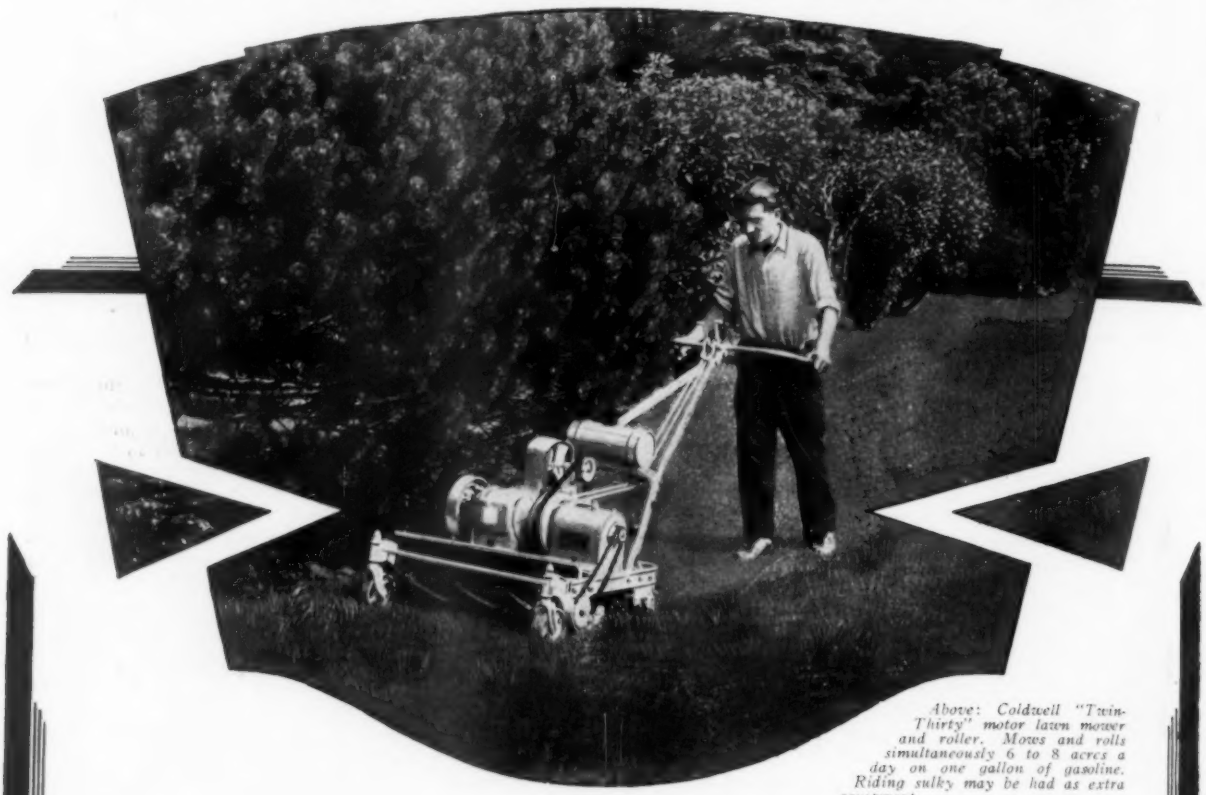

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Milwaukee's Current Finances Analyzed

THE Citizens' Bureau of Milwaukee has been making some interesting analyses of that city's finances. On the matter of municipal indebtedness, the Bureau reports that the city government has issued since 1911 $76,363,000 of bonds, representing 175 separate issues. Two-thirds of this total were issued during the past ten years. The net debt outstanding on January 1, 1931, was $45,018,450. The city government will be able to issue $5,800,000 in new bonds during 1931.

The Bureau points out that $3,612,150 in bonds were retired during 1930 and $4,350,000 new bonds were issued. This means that the city is taking out of one pocket and putting into another practically the same amount each year. "All of which," says the Bureau, "indicates the need for the careful husbanding of the city's bond resources." The long-term improvement program is recommended as one of the best methods of assuring a maximum return from the tax dollar of the city government.

In speaking of Milwaukee's budget for 1931, the Bureau says that, in its tentative form, it totals $38,126,722, which is a decrease of $671,696, or 2 per cent below the 1930 budget. This is the first time there has been a decrease in the city budget since 1922. It is significant, the Bureau thinks, that the decreases of 1922 and 1931 occur in permanent improvement appropriations and not in the appropriations for governmental operation. The total permanent improvements to be financed from taxes, miscellaneous revenues, and Water Department revenue for 1931 is fixed at $3,954,070, or a decrease of 24.7 per cent from the amount provided in 1930.

St. Louis Sinking-Funds Subjected to an Analysis

THE Bureau of Municipal Research of St. Louis, under the directorship of Carter W. Atkins, has recently prepared for the municipal authorities an analysis of the sinking-funds of that city. This analysis grew out of the fact that several proposals have just been made for the issuance of bonds over and above the $87,372,500 of bonds authorized in 1923, which amount was supposed to provide for the city's capital needs until 1933 under the ten-year capital improvement program.

The Bureau finds that the gross general bonded debt of the city on April 7, 1930, was $61,294,000, excluding the water debt. Sinking-fund assets amounted to $7,897,329.85, making a net general debt of $53,396,670.15. Of the total outstanding general bonded debt, $6,470,000 is in the form of twenty-year term bonds, and $54,824,000 is twenty-year deferred annuity or twenty-year serial bonds authorized by the voters in 1923 and 1928 respectively. Four separate bond issues comprised the outstanding general bonded debt on the date of the analysis. These issues are known as the 1914 bond issue for the municipal bridge ($2,677,000 outstanding); the 1920 public buildings and public improvements issue ($3,793,000 outstanding); the 1923 public buildings and public improvements issue ($52,824,000 outstanding); the 1928 airport issue ($2,000,000 outstanding). In addition there is a gross water debt of $12,082,000, with sinking-fund assets of $2,252,063.37, making a net water debt of $9,829,936.63.

The Bureau finds a net surplus of $1,037,075.89 in the general bond sinking-funds due to the levy of a heavier tax than was necessary in the past. It recommends that this surplus be used to lighten the debt levy in the future by retiring part of the present outstanding bonds. It calculates that a total of $1,725,000 of bonds may be canceled by the use of the existing surplus and the release of additional sinking-fund reserves by virtue of the canceled bonds. The savings in interest would amount to $793,012.50.

The analysis concludes with a discussion of the administration of the city's bonded debt. It recommends the actuarial computation of the sinking funds, stresses the advantages of serial bonds for the future, makes suggestions on the investment of sinking-funds and the handling of sinking fund earnings, and suggests the readjustment of the city's fiscal year with respect to tax collections.

Changes Advocated in New York City's Budgetary Procedure

THE committee on taxation and public revenue of the Merchant's Association has decided to recommend to the New York Legislature the passage of a bill changing the fiscal year of the city government so that it will run from July 1 to June 30, instead of from January 1 to December 31, as at present. This would make the fiscal year of the city uniform with that of the national and state governments.

The Association has also agreed to support legislation providing for the establishment of a capital outlay budget for the city government. It is proposed that the capital outlay budget be prepared sufficiently in advance of the city's tax budget to allow for its due consideration in conjunction with the tax budget, and that the adoption of each capital outlay budget be made only after public hearing. After the capital outlay budget has been adopted, it is proposed that a two-thirds vote of the Board of Estimate and Apportionment be required to change it.

As we recall, recommendations similar to these were made in the Lehman Report prepared under the direction of Professor Lindsay Rogers of Columbia University. While some objections may be raised to certain minor points, none can be found against the major proposals. The city authorities and the State Legislature should proceed with these fiscal reforms.

Peter Grimm, President of the Real Estate Board of New York and Chairman of the Budget Fact-Finding Committee, recently asserted that the taxpayers of New York City were faced with an annual tax budget of a billion dollars. He thought, unless some drastic steps were taken, that the city government would follow Chicago into semi-bankruptcy. He attributed much of the enormous cost of New York City government to waste due to overlapping and duplication of work, as well as many needless jobs.

Portsmouth, Ohio, Applies Improved Budgetary Methods

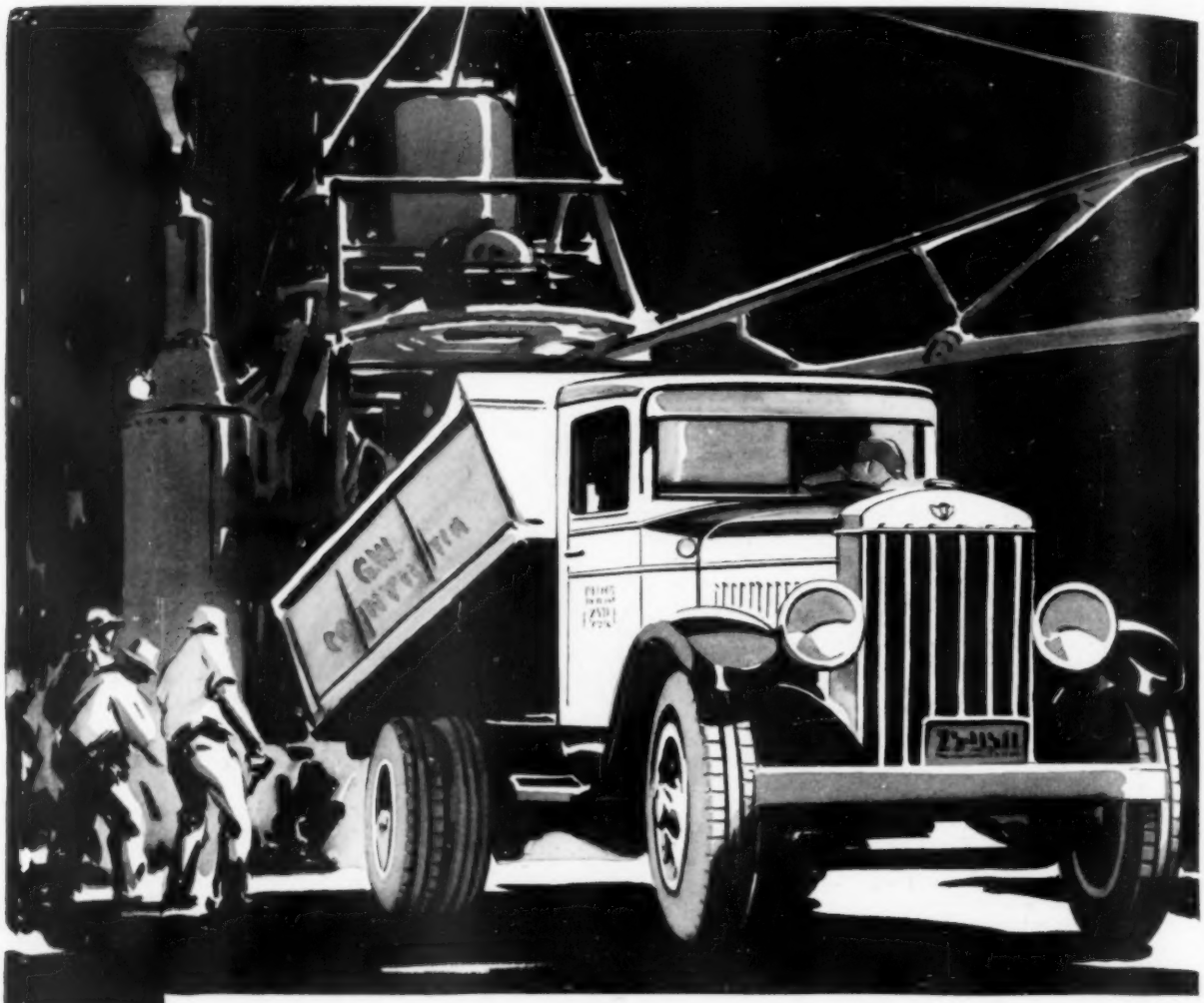
CITY MANAGER C. A. HARRELL, of Portsmouth, Ohio, writes an interesting letter about the budgetary methods which he is applying in that city. He has found it necessary to determine, first of all, how much money the city government could afford to raise by taxation, and then to cut the expenditures to fit this amount. In so doing, he does not disregard the experience of the past or the necessity for continuing existing services upon a thoroughly satisfactory basis. Mr. Harrell says he is convinced that there are many advantages in beginning with the city's tax rate rather than working toward it in municipal budgeting. This is an interesting commentary that seems to be supported by the experience of certain other city managers.

Mr. Harrell is applying the monthly allotment system to departmental expenditures. He is requiring all departments to allot their appropriations, setting up a 10 per cent reserve, except in those for personal services. He feels that this method is working effectively, although he thinks that he may have to reduce the amount of the reserve before the current year is over, or allow it to be turned back more freely.

Detroit Characterized as Having "Government by Deficit"

THE Detroit Bureau of Governmental Research states that the budget of that city has not levied enough taxes over a number of years, and as a consequence the city government now faces an estimated deficit of $22,000,000. The deficit is piling up rapidly during the current fiscal year. The city budget bureau in a report issued on October 31, 1930, gave the status of 79 appropriation accounts in 14 funds, aggregating over $12,000,000. The actual expenditures from these accounts during the first four months of the fiscal year were 6 per cent above the quota for the period allotted by the budget bureau.

It is stated that the deficit arises in several ways, such as awards in condemnation cases, relief of unemployment conditions, inadequate appropriation for current operation and maintenance, and so on. The Bureau observes that such deficits may be avoided in only one way, namely, by adequate appropriations for all expenditures of each year, plus budgetary and accounting control that will make over-spending impossible.



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THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, Attorney at Law

Taxing Non-resident Vendors

License tax against "itinerant vendors" held void as being excessive and discriminatory.

Defendant city, Fremont, Nebr., adopted an ordinance imposing an annual license tax of $300 on each "itinerant vendor at wholesale of fruits, potatoes, vegetables, flowers, groceries, hay, straw, bread, grain, pastries, or other kinds of goods not herein specified." But in a suit brought by an Omaha wholesale baking company the ordinance was declared to be void, by the Nebraska Supreme Court. (*P. F. Peterson Baking Co. v. City of Fremont*, 228 N. W. 256.) The Court said that the ordinance was unenforceable for failure to define "itinerant vendor," but that, assuming the term included non-resident wholesale dealers distributing their products to retail dealers, the ordinance was void as being unjustly discriminatory and as imposing an excessive tax. Concerning the rights of such dealers, the Court said:

"They are engaged in a lawful enterprise on an extensive scale. They have a right to conduct their business in Fremont on reasonable terms applicable alike to all wholesale bakers in the same class. They cannot legally be excluded from Fremont by means of a prohibitive excise tax that wholesale bakers therein are not required to pay. . . . Wholesale bakers in Fremont were not subjected to the business or occupation taxes. In practical effect those taxes were not imposed for licenses permitting the Omaha bakers as licensees to transact business in Fremont but to prevent them from doing so. . . .

"The taxes were also invalid as imposing an unreasonable and confiscatory burden. It is a fair inference from the evidence that the net annual profits of each of the two Omaha bakeries, based on net earnings at the time of the trial, exclusive of the excise taxes, would be approximately $420. An annual tax of $300 on the occupation of each would destroy the incentive to sell and deliver bread in Fremont and would amount to an illegal prohibition of the right to do so."

Tax Exemption

Statute authorizing assessment of school-district property for sewer improvement did not permit assessment for drainage.

In the case of *Borough of Wilkinsburg v. School District*, 148 Atl. 77, the Pennsylvania Supreme Court decided that school-district property is exempt from special assessment for local improvements excepting as expressly made subject thereto. And it was held that statutory provisions authorizing assessment of such property for sewer improvements did not permit an assessment for the enclosing of a natural watercourse and the drainage of surface water. The Court said:

"Property of municipal subdivisions of the state cannot be assessed unless some statute expressly so provides, and no exemption law is needed to relieve lands held for public purposes from such charges. . . .

"'In the common sense of the term "sewer," it means a large and generally, though not always, underground passage (or conduit) for fluid and feculent matter, from a house or houses to some other locality,' usually the place of discharge. Other courts have defined a sewer to be a closed or covered waterway for conveying and discharging filth, refuse, and foul matter, liquid or solid, while ditches are drains which are or may be open and so arranged as to take away surface water."

Important Legal Decisions

involving municipalities, as reported in this department during 1929, are indexed and classified in the 1930 MUNICIPAL INDEX. This reference list, commencing on page 151 of the 1930 INDEX, supplements lists appearing in the 1929 and 1928 volumes. A similar feature, for 1930, will appear in the 1931 MUNICIPAL INDEX, now in course of preparation.

Purchase of Patented Articles

Statute requiring competitive bids in purchasing supplies held not applicable to patented articles.

A statute governing Stamford, Conn., requires that on each requisition for "articles, supplies and materials which amounts to more than $200, said purchasing agent shall obtain at least two bids, and such orders shall be placed with the lowest responsible bidder."

In the case of *State v. Board of Purchase and Supplies*, 149 Atl. 410, the Connecticut Supreme Court of Errors decided that the statute does not apply to things that are covered by patent and therefore purchasable only from one source (in this case a fire truck). The Court said:

"On the one hand we find the common council exercising not only its undoubted right, but fulfilling its imperative duty, to provide the fire department with suitable apparatus for which the taxpayers' money has been supplied and which they are entitled to expect. On the other hand, if the requirement of two bids is to be interpreted literally and applied to a situation of this kind, we must hold the legislative intent to be that the city of Stamford may not avail itself of new discoveries and new developments and the most modern of materials and supplies, if these are protected, as is often the case, by patents, so that their sale is controlled from a single source. This is offensive to the fundamental principles of a sound public policy, and would require the city to 'travel in the same paths in which the predecessors trod without benefit from any new discoveries of science, or any advances in matters of work applicable to public use.'"

Liability for Sewer Overflow

City held liable for overflow resulting from permitting storm waters to flow into insufficient sanitary sewer.

A city is liable for damage to private property through overflow of a sanitary sewer into which storm waters have been negligently turned in time of flood, knowing the sewer to be insufficient for that purpose, declared the Alabama Supreme Court in *City of Birmingham v. Greer*, 126 So. 859. The Court remarked:

"Appellant [the city] invokes a principle which would relieve it from liability for errors of judgment in planning and executing a general system of drainage, including the size and levels of the drains and sewers when its officers follow the advice of skillful engineers. . . . But while this principle seems to be well supported, there is also a well-supported limitation, to the effect that following the advice of skilled engineers in that matter is not a justification for the failure to exercise due care and not be negligent either in executing such plans or in maintaining the system after it is built."

Increasing Contract Price

City's agreement to increase sewer contractor's compensation beyond contract price held void as a gift of public funds.

After a sewer construction contract had been made, its performance was interrupted through war conditions, including the temporary commandeering of the contractor's equipment by the Federal Government. When the work was completed, the city compromised the contractor's claim for extra compensation. But the Iowa Supreme Court decided that the city had no such power (*Love v. City of Des Moines*, 230 N. W. 373):

"The power of the city council over the contract and its compensations was limited by the terms of the contract itself. They were bound to pay in full. They were not bound to pay more. Not only so, but they were bound not to pay more. If by any specious plea their sympathies had been won whereby they had desired to add a bonus to the compensation of the contractor, they had no legal power to perform the wish. To perform it would be illegal. The contractor performed his contract, and through his assignee drew his compensation in full. This was of legal necessity full satisfaction of every obligation of the city in relation thereto."

"I still don't know why we didn't hit him"

The narrow escape and the narrow road are close cousins. Once a community makes up its mind to act, it takes only a short time and a comparatively slight outlay to widen a road sufficiently to eliminate most of the accident hazard.

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Water Charges

Charges for city water service may be made a tax lien against the property served, under proper legislative authority.

Under the statutes of Ohio, charges due a city for water service constitute a tax lien against the property served, and on bankruptcy of the consumer the claim is a preferred one against his estate. In reaching this conclusion in the case of *McDowell v. City of Barberton*, 38 Fed. 2d. 786, the United States Circuit Court of Appeals, Sixth Circuit, said, in part:

"Ordinarily, compensation for water furnished by a municipality is not a tax, but it may be brought within such category. Unless hampered by constitutional restrictions, the matter is one of legislative will. If the Legislature remains silent, the city supplies water by contract and the consumer's obligation is a debt. But here the Legislature had acted. For the purpose of paying the expenses of conducting and managing the waterworks, it had authorized the director to make an equitable assessment upon all tenements and premises supplied with water and to collect the same; . . . that, in case of a delinquent tenant, the director shall look directly to the owner of the property for such of the rent as remains unpaid 'which shall be collected in the same manner as other city taxes.'

"The evident purpose of sections 3957 and 3958, Ohio Gen. Code, though somewhat awkwardly expressed, was to give the city better security for the collection of its water-rents, taking them out of the class of contract debts and characterizing them at least as special assessments upon real estate. There was no provision that their assessment and collection should be according to any constitutional guaranty as to uniformity, or to any legislative regulation as to method, but this was unnecessary because the Legislature was dealing with a local matter only."

Limited Suffrage

Statute limiting voting to taxpayers held unconstitutional.

Under the provision of the Oregon Constitution, authorizing "every citizen of the United States" to vote, a statute enacted by the Legislature in 1929, limiting to taxpayers the right to vote on the levy of special taxes or the issuance of bonds, is void. (Oregon Supreme Court, *Veatch v. City of Cottage Grove*, 289 Pac. 494.)

Interest in Contract

Lease of city's water and light plants to Mayor and Alderman was void.

With apparent good intent to serve a public purpose, the City Council of Osceola, Ark., attempted to lease the municipal water and light plants to the Mayor and three of the Aldermen for 20 years. Adjudging the lease to be void, the Arkansas Supreme Court said (*Rogers v. Sangster*, 23 S. W. 2d, 613):

"Municipal officers are held by the courts to a strict accountability in their dealings with or on behalf of the municipal corporation; and in recognition of their incapacity to serve two masters, as an incident to the frailty of human nature, public policy has placed a disability to make a contract for the city where they are interested in it in any degree. The rule is so inflexible that no inquiry into their good or bad intention or to the fairness of the contract is permitted."

Delegation of Power

Council cannot delegate to commissioner its power to designate one-way streets.

"The attempt of the common council [of Schenectady] by ordinance to lodge with the commissioner of public safety its authority to designate one-way streets is without avail, because it may not legally delegate this discretionary power to another." New York Supreme Court, Schenectady County: *Schenectady Knights of Columbus Building Assn. v. Golden*; 235 N. Y. S. 226.

Sign Regulation

Ordinance regulating electric signs upheld.

The city of Passaic, N. J., ordained: "Before any signs, fixed awning, or other projecting object, billboard or advertising device is altered or erected upon or above the ground or upon or above any building in the city of Passaic, a permit shall be obtained from the Bureau of Buildings, for which an annual fee shall be paid, except that temporary signs (as therein described) may be erected without a permit." Said the New Jersey Supreme Court concerning this ordinance, in the case of *Ackerman v. Steiner*, 147 Atl. 746:

"Without expressing any opinion as to the reasonableness of the ordinance in other respects or as to other signs, it seems that there can be no question that the ordinance was quite reasonable in so far as it required a permit in respect to a sign of the type in question operated by electricity."

Regulation of Advertising

Ordinance barring advertising vehicles from certain thoroughfares held invalid.

The following ordinance adopted by the city of St. Petersburg was upheld by the Florida Supreme Court as being a valid exercise of municipal power to regulate the use of streets, etc.:

"No person or persons shall operate or drive upon Central Avenue or the Municipal Pier any vehicle used for advertising. Provided, however, that the provisions of this section shall not apply to circus parades on Central Avenue when proper license has been obtained therefor, nor shall same apply to any parade sponsored by the municipality." (*Noel v. Griffin*, 129 So. 511.)

Shade-Tree Removal

Right of city to remove trees from streets in making improvements upheld.

"The right of a municipality to remove shade trees in public streets when necessary for the improvement of said streets, and without liability to an abutting owner, is not open to question. . . .

"The appeal of respondents that the destruction of these trees should be deplored and prevented because they are 'useful as well as esthetic contributions to the comfort of habitation' is one that might seriously engage the legislative branch of the city government. On the other hand, the demands of rapidly growing traffic may make the removal of the trees a paramount necessity. In any event, it is purely a matter of legislative concern." (*Neill v. City of Glendale*, 289 Pac. 877.)

Liability for Fire Loss

City held not liable for fire loss resulting from failure to maintain fire department.

"The determination by a city as respects the maintenance of a fire department . . . is a governmental function, and the failure of a city to maintain such a department affords no ground for an action against the city for damage from fire caused by a failure of the city to maintain a fire department." (Georgia Court of Appeals, *Edmondson v. Town of Morven*, 152 S. E. 280.)

Benefit Assessments

Assessment of railway property for street paving upheld.

Under the front-foot rule for the assessment of property for street paving, it being presumed that all abutting property is equally benefited, "acreage property" owned by a railway company is subject to assessment. Right-of-way occupied by a freight depot, stock-pens and switch-tracks is subject to assessment as being benefited by such an improvement. An assessment exceeding special benefits is invalid, but the burden is upon the railway company to prove the assessment substantially exceeds benefits. (Tennessee Supreme Court, *City of Rockwood v. Cincinnati, New Orleans & Texas Pacific Railway Co.*, 22 S. W. 2d, 236.)

Council may delegate to engineer apportionment of special improvement costs.

Computation of assessment to be levied against abutting property, according to front footage, being merely a matter of mathematics, may be delegated by a city council to the city engineer. Reaching this conclusion in the case of *City of Rockwood v. Cincinnati, New Orleans & Texas Pacific Railway Co.*, (cited above), the Tennessee Supreme Court said:

"The general rule against delegation by municipal bodies does not forbid the delegation of ministerial, executive, or administrative functions to subordinate officials. . . .

"Certainly it requires more judgment and discretion for an engineer to establish the grade of a street than it does to apportion the cost of an improvement when all of the data is before him. It seems to us that the engineer is the proper person to make the computation. He is better qualified for such work than the average town board.

"We have been referred to no authority holding to the contrary."

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Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

ZONING and PLANNING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

Recent Zoning Ordinances

CALIFORNIA.—Oakland. February, 1931.
MASSACHUSETTS. — Concord. December 13, 1930.
NEW YORK.—Elmsford. October 28, 1930.

Retroactive Zoning—Hospitals in Residential Districts

CALIFORNIA.—*Jones v. City of Los Angeles, U. S. Daily*, February 2, 1931.—A city ordinance provided that outside of certain designated districts it should be unlawful to erect, establish, maintain or conduct any hospital or home for insane persons or persons with mental or nervous diseases. This, in effect, excluded such institutions from a residential district known as Mar Vista, in which there were several such institutions. *Held*, that, although the exclusion of future institutions from such an area is valid, compelling the removal of existing institutions by retroactive legislation is unconstitutional. The permitted districts are more than one-third the area of the city, and include the downtown business district, as well as various other built-up districts. The permitted districts are not, therefore, unreasonably small. The sanatoria are not nuisances. The power to exclude nuisances from a given territory by retroactive legislation is not questioned; but zoning is not limited to the control of nuisances, and retroactive zoning legislation of this sort is invalid. Cases in other jurisdictions to the contrary are distinguished.

Nuisance—Industrial Zone

CALIFORNIA.—*R. J. Collins v. Southwest Welding and Manufacturing Company of Alhambra*, Superior Court, County of Los Angeles, February, 1931. Action to prevent the operation of a welding plant in an industrial zone during the night on the ground that the noise prevented the petitioner and his family from sleeping. *Held*, that the operation of a legitimate industry, conducted according to the most modern methods, even at night, in this location, should not be enjoined.

Streets

FLORIDA.—*Gold v. City of Tampa*, 130 So. Rep. 914.—An abutting owner has no constitutional right to enjoin an authorized alteration of a street grade which will obstruct ingress to and egress from his lot. His remedy is suit for damages.

Traffic Rules

CALIFORNIA.—*Lindenbaum v. Barbour*, 293 P. 829.—A county board of supervisors may designate certain public highways as boulevards and under certain conditions require vehicles to stop before entering or crossing.

Pool Rooms

FLORIDA.—*State ex rel. Luke v. City of Tallahassee*, 130 So. 386.—The city, under its charter granting powers conferred upon municipalities by general law, had power to regulate pool and billiard rooms and prescribe an area for their operation.

Eminent Domain

MICHIGAN.—*Dohany v. Rogers, State Highway Commissioner*, 5 Sup. Ct. (U.S.) Reporter 299.—Highway Commissioner's taking land for purpose of exchange with railroad, which was to be relocated and its right-of-way used for widening highway, is a public use.

"We need not inquire whether, under the peculiar provisions of the Michigan statutes, the proposed taking of appellant's land is for highway or railway purposes. It is enough that, although the land is to be used as a right-of-way for a railroad, its acquisition is so essentially a part of the project for improving a public highway as to be for a public use." See *Brown v. U.S.* 263 U.S. 78; *Pitznogle v. Western Md. R. Co.* 119 Md. 673.

Zoning by Eminent Domain

MINNESOTA.—*State ex rel. Madsen v. Houghton, City Inspector of Buildings*, 233 N. W. 831.—The statute relating to the creation by condemnation of restricted residential districts in cities of the first class (Laws, 1915, ch. 128) is valid; and building restrictions imposed under that statute are not affected by subsequent zoning laws (Laws, 1915, ch. 128, as amended by Laws, 1923, ch. 133, and Laws, 1921, ch. 271, as amended by Laws, 1923, ch. 364), and ordinances adopted thereunder.

The decision in *State ex rel. Twin City Building and Investment Co. v. Houghton*, 144 Minn. 1, holding laws of 1915, ch. 128, constitutional, is adhered to.

Nuisance

NEW YORK.—*City of Albany v. Newhof*, 246 N.Y.S. 100.—A city ordinance prohibiting slaughtering cattle, sheep or swine in buildings within certain prescribed territory without permission from the common council, is valid. The city has home-rule powers.

Board of Appeals—Variances

NEW YORK.—*Matter of Reed v. Board of Standards and Appeals*, 255 N. Y., 126.—A contention that the Board of Standards and Appeals of the city of New York had no jurisdiction to entertain an application for leave to erect a theater on a plot of land, a portion of which extended into a residence district, for the reason that it had previously denied an application upon the same state of facts, cannot be sustained, where new plans materially changed the aspects of the case. Though the Board had power to make changes it deemed necessary in the plans, it was not bound to exercise it, and it did not exhaust its jurisdictional powers by denying the application and waiting until proper plans were submitted on a new application.

Under section 7 (c) of the Building Zone Resolution of the city of New York, authorizing the Board of Standards and Appeals, in appropriate cases, after public notice and hearing, to "permit the extension of an existing or proposed building into a more restricted district under such conditions as will safeguard the character of the more restricted district," a variation may be made to meet a specific case in order to enable the owner to make a reasonable and profitable use of his property, if it can be done without violence to the general zoning plan and without causing substantial inconvenience to the immediate neighborhood.

Section 21, providing that a variation may be allowed where it is shown that the carrying-out of the strict letter of the Resolution would result in "practical difficulties or unnecessary hardships," is an independent provision and the rule, applicable thereto, that the Board may not consider the advantage to a single property owner of whether the property is more suitable for a forbidden use than for a permitted one, does not apply to an application made under section 7. An argument, therefore, that the premises in question may be used for other purposes to advantage is irrelevant.

To enable the Board to proceed under section 7 (c), two fundamental considerations must prevail. The general purpose of the Zoning Resolution must be respected and the more restricted district must be safeguarded. In making a determination, the rule of reasonableness must be applied, but the Board has a wide scope in the exercise of its discretion, and where it grants an application the only question on review is whether its action is unjustifiable as matter of law.

In this proceeding, upon examination of the record, it cannot be said as matter of law that the action of the Board in permitting the erection of the proposed theater on land partly extending into a more restricted district, under section 7 (c) is without evidence to support it. As it acted within its jurisdiction, its determination therefore cannot be set aside.

Garage

NEW YORK.—*In re Peck*, 246 N.Y.S. 280.—A town ordinance prohibiting a garage having an automobile entrance within 300 feet of a school entrance, and regulating filling station locations, is reasonable.

Junk Yards—Licenses

WISCONSIN.—*Lerner v. City of Delevan*, 233 N. W. 608.—An ordinance forbidding the keeping of junk yards without a license is valid, and did not vest in the city council arbitrary power to grant and revoke licenses.

YANTIS WELLS, Mayor
GUS A. HALL, City Attorney
Councilmen-at-large
HAUGHEY D. MOUNT
HARRY E. ROACH

Councilmen
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2nd Ward—VICTOR J. PORTER
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Platting—Highways

WISCONSIN.—*Whitehead and Matheson Co. Limited v. Jensen*, 233 N. W. 546.—Platting a highway by the owner of the land, although it is dedication as far as the owner may dedicate it, does not, in the absence of some act showing acceptance by the municipality, make the land a public street.

Cleveland, Ohio, Zoning Ordinance

The Cleveland Board of Appeals has issued, in typewritten form, its first annual report, covering the period from November 5, 1929, to January 1, 1931. The report gives the experience of the Board during that period in the administration of the ordinance.

The Preparation of Zoning Ordinances

The attention of the readers of this department should be called to this exceedingly useful and timely publication of the United States Department of Commerce, more fully reviewed in the January issue of this magazine. It is modestly described by its authors as "A Guide for Municipal Officers and Others in the Arrangement in Zoning Regulations," but is in addition an exposition of many important principles as to the wording and content of such regulations.

Progress of City and Regional Planning in 1930

Under this title Charles H. Cheney has issued to the newspapers his second annual review. The article covers all phases of the subject, with special emphasis, as is usual with the author, on esthetics, and incidental reference to the timely subject of unemployment in its possible relation to planning. An abstract is obtainable on application to the author, addressing him at Palos Verdes Estates, Calif.

Planning in Los Angeles

A full account of planning activities, including zoning, and the regulation of subdivisions in Los Angeles for the year ending June 30, 1930, will be found in the Anuual Report, Board of City Planning Commissioners, recently issued by the Department of City Planning of that city.

The Municipal Bond Market

By **SANDERS SHANKS, JR.**
Editor, *The Bond Buyer*

A REMARKABLE demonstration of strength in the municipal bond market was witnessed on February 11 when two of the largest new issues offered so far this year were awarded to banking syndicates and immediately over-subscribed. These issues consisted of $15,000,000 state of Louisiana 4½ per cent highway bonds and $27,325,000 city of Chicago 4 per cent bond issues for various city and school district improvements.

This financing was negotiated at a time when the bond market was threatened by soldier bonus legislation of a most dangerous character. Such a notably successful underwriting of two such issues, under the circumstances, is considered striking evidence of the great fundamental strength of the investment market and offers assurances of a long-sustained demand for good bonds during the period of recovery from the depression which, it is believed, we have now definitely entered.

State and municipal financing in January was unusually small in volume; the month's total being the smallest since June, 1920. A more normal figure will be reported for February, and the month of March may set a new high record, should it happen that the expected offerings of both New York State and New York City are scheduled for the same month. The state issue will amount to $35,000,000, and New York City may ask for $100,000,000 more or less.

The following table, giving the details of recent sales of new issues, will indicate the current level of municipal bond issues:

Amount	Municipality	Rate (%)	Maturity	Net Basis (%)
$1,800,000	Jersey City, N. J.	3½	2 1/3-yr. (avg.)	3.45
133,086	Auburn, N. Y.	4	5 1/3-yr. (avg.)	3.88
3,120	Clay Co., Ind.	4½	6¼-yr. (avg.)	3.97
126,000	Concord, N. H.	4¼	13½-yr. (avg.)	4.08
1,000,000	Anne Arundel Co., Md.	4½	19-yr. (avg.)	4.12
55,000	Janesville, Ia., Ind. Sch. Dist.	4¼	11 5/6-yr. (avg.)	4.21
15,000,000	State of Louisiana	4½	17½-yr. (avg.)	4.49
27,325,000	Chicago, Ill.	4	7 1/6-yr. (avg.)	4.57
60,000	Dayton, Ohio	4¾	6 1/6-yr. (avg.)	4.62
35,000	Newport News, Va.	4¾	11 5/6-yr. (avg.)	4.69
185,000	Johnston Co., N. C.	5	19 1/3-yr. (avg.)	4.87
260,000	Mobile Co., Ala.	5	16¾-yr. (avg.)	4.99
7,000	Tulare Co., Calif., Linwood Sch. Dist.	6	1-14-yr. (ser.)	5.36
36,000	Beaufort, S. C.	5¾	11-yr. (avg.)	5.70

Arbor Day to Assist Washington Memorial Tree Planting Program

THE American Tree Association, which is sponsoring the idea of planting 10,000,000 trees in commemoration of George Washington, before the coming of his 200th birthday anniversary in 1932, is expecting this year's observance of Arbor Day to give special impetus to the campaign.

The various Arbor Day dates in different states are as follows:

Arizona—in five northern counties, April 3.
Arkansas—March 7.
California—March 7.
Colorado—April 17.
Connecticut—April or May by proclamation.
Delaware—April by proclamation.
District of Columbia—April 17.
Idaho—April 29.
Illinois—proclamation in April.
Indiana—April 10.
Iowa—proclamation.
Maryland—April 10.
Massachusetts—April 25.
Michigan—April 25.
Minnesota—in April.
Missouri—April 10.
Montana—May 12.
Nebraska—April 22.
New Hampshire—proclamation in May.
New Jersey—April 10.
New Mexico—March 13.
New York—last Friday in April and the first two Fridays in May for upper and lower parts of state.
North Carolina—March 20.
North Dakota—option of governor.
Ohio—proclamation of governor.
Oregon (Eastern)—April 10.
Pennsylvania—proclamation of governor.
Rhode Island—May 8.
South Dakota—April.
Tennessee—April 3.
Utah—April 15.
Vermont—option of governor.
Virginia—proclamation in spring.
West Virginia—April 10.
Wisconsin—May 1.
Washington—May 1.
Wyoming—May 1.

The American Tree Association—which will furnish tree-planting instructions from its headquarters at 1214 16th St., N.W., in Washington, D. C.—urges that so far as possible all memorial trees shall be set out, and registered with the Association, this spring, so that living, growing trees may be dedicated on February 22, 1932.

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Municipal Government

The Organization, Functions and Expenditures of Local Government in New Jersey.—By the Commission to Investigate County and Municipal Taxation and Expenditures, Trenton. 1931. *Published in three sections, totaling* 273 *pp.*

The Commission to Investigate County and Municipal Taxation and Expenditures was created by the New Jersey Legislature early in 1930. It employed Professor H. L. Lutz of Princeton University to direct its work and secured the staff assistance of Griffenhagen & Associates, of Chicago, in making its investigations. The report, carrying the above title, contains the fruits of the first year of the Commission's labors. This report has been published in three sections, the first one dealing with "some aspects of local governmental organization and structure," the second one with "the expenditures and functions of local government in New Jersey," and the third one with "a discussion of some factors contributing to the high cost of local government, and a suggested program of revision and reconstruction." The first two sections are largely descriptive and statistical. The third section attempts an analysis of the present conditions and makes recommendations for changes. This section is really the important part of the report.

The analysis of present conditions shows maladministration, defective local governmental organization, absence of effective means of controlling expenditures, and exaggeration of the home rule doctrine, to be the chief difficulties. Proposals of the Commission for meeting these difficulties are (1) to simplify the local government organization and structure, (2) to establish a basis for intelligent criticism of public expenditures, through the development of standards of service and costs, (3) to recognize the importance of state and local cooperation in providing governmental services, (4) to re-allocate the responsibility for performing various services according to logical analysis rather than by accident or tradition, (5) to recognize the distinction between the policy-determining function and the administrative function, and (6) to eliminate the system of patronage.

A. E. Buck.

Detroit Rules Itself.—By William P. Lovett. The Gorham Press, Boston. 235 *pp.* $2.00 *from* The American City.

Here is a bright, cheering volume devoted to the faith and good works of a reformer. Mr. Lovett, the widely known and respected Secretary of the Detroit Citizen League, is a reformer and proud of it. In this little volume he portrays the plight of Detroit thirty years ago and the changes which time and civic devotion have wrought. He is deeply impressed with the importance and utility of municipal home rule. He is satisfied that the direct primary and the referendum have demonstrated their usefulness. Public ownership of street railways has vindicated itself. Above all, he has an abiding faith in democracy and the ability of the people to choose honest and capable leaders and follow sound programs of public policy. Mr. Lovett's book is a record of extraordinary civic achievement. Few large cities could boast of half as much. And much of the progress Mr. Lovett records must be attributed to the insight, energy and self-sacrifice of the leaders whom he praises and in the more recent period to his own efforts among them.

Joseph McGoldrick.

Social Surveys

Under the title, "A Bibliography of Social Surveys," the Russell Sage Foundation has published "reports of fact-finding studies made as a basis for social action, arranged by subjects and localities," by Allen Eaton, in collaboration with Shelby M. Harrison, Director, Department of Surveys and Exhibits, of the Foundation. The volume, of 460 pages, is presented in four divisions: General Social Surveys; Surveys in Specialized Fields; Publications on Purpose, Method and Standards in Surveys; and Geographical Index. Reports included are all dated previous to January, 1928. Clothbound, $3.50. (Apply to The American City.)

Municipal Expenditures

Municipal Expenditures.—By Mabel L. Walker. The Johns Hopkins Press, Baltimore. 1930. 217 *pp.* $2.25 *from* The American City.

This book contains the results of an extensive study of municipal expenditures made by Miss Walker during 1929 and 1930, while she was a graduate student at Johns Hopkins University. It is in reality a doctoral dissertation, but, unlike most dissertations, the book has permanent value and is quite readable. The central theme emphasizes the value of comparative data in city administration. To this end a grading of the important cities in the country according to service rendered has been attempted. The essential data used as a basis for this grading were published in an article by the author in The American City for July, 1929, under the title, "Rating Cities According to the Services Which Their Citizens Are Getting."

In order to give something of a "philosophical" background to her discussion of the rating of cities, Dr. Walker prefaces her study with three chapters on "Accents in City Government," "Progressive Criteria of Municipal Administration," and "A Theory of Expenditure." She thinks that the actual prorating of estimated revenues among the various city functions is largely based on the previous year's allotments, with "some concessions being made in the direction of the loudest howls," many municipal agencies having developed a "real technique in the matter of emitting the proper yelp at the psychological moment." It is her theory that the "distribution of appropriations should be so proportioned that the last dollar expended on any one function shall be equivalent in social utility to the last dollar expended on any other function." She examines this in the light of the doctrine of "marginal utility."

Having set up ratings for cities over 30,000 population, the author discusses the factors affecting these ratings, tendencies in budget distribution, and restraints on budget distribution. Then she attempts some general conclusions. Appended to the text is a comprehensive bibliography of source material.

A. E. Buck.

State Parks

A State Park Anthology—Selected and edited by Herbert Evison, Executive Secretary, National Conference on State Parks, Washington, D. C., 1930. 200 *pp. Clothbound,* $2.50; *paper,* $1.75; *from* The American City.

How state parks are acquired; principles governing their acquisition; state park values, real and sentimental; and what some states are doing by way of providing outdoor recreation facilities for their citizens, are among subjects specifically discussed in this volume. It is a volume that constitutes a record and a philosophy of state park development, arranged in 36 sections from material from many quarters. Many of the authors, including Frederick Law Olmsted, Harold A. Caparn, Jay Downer, S. Herbert Hare, L. H. Weir, Raymond H. Torrey, Beatrice Ward Nelson, and others, are already familiar to readers of The American City. Lay citizens as well as public officials and land planners will find both information and interest in such contributions as "Trails in State Parks," "Trailside Conversations," "Group Camping," and "How to Enjoy State Parks."

Schools

The "Report of the Financial Survey of the Public Schools, Greenwich, Connecticut, 1930," made for the Greenwich Board of Estimate and Taxation by Carter Alexander, Professor of Education and Staff Specialist in School Finance of Teachers College, Columbia University, compares the expense of operating the public schools of Greenwich with those of other comparable communities in the adjacent region. The expenses were found to be about average, but the Report indicates the need of a junior high school and of higher salaries for teachers. 37 pp. (Apply to Dr. Alexander, Institute of Educational Research, Teachers College, Columbia University, New York.)

Michigan Municipal League

The Proceedings of the 32nd annual convention of the Michigan Municipal League held at Bay City, Mich., September 17-19, 1930, are published by the League in a paper-bound volume of 219 pages. Topics treated by various speakers included sewage disposal, public health engineering, park departments, municipal purchasing, unemployment relief, municipal budgets, the Michigan highway program, and contrasts between municipal government in the United States and Canada. A number of round-table discussions were conducted by seven different groups of officials—mayors, commissioners and councilmen; village officials; city clerks; city auditors; city managers; city engineers; and city attorneys. The topics for the mayors included municipal recreation, city planning, milk supply, delinquent special assessments, and cooperative purchasing. The village officials discussed insurance of volunteer firemen, the advantage of becoming a fifth-class city, and the distribution of the automobile weight tax; the city clerks, licenses for transient merchants, and the permanent registration system; the city auditors, the effect on the city's credit of excessive levying of special improvement taxes, and uniform accounting and reporting. The round tables for the managers, engineers and attorneys were not reported. $2.00. (Apply to the League, Ann Arbor, Mich.)

Unemployment

"*Unemployment: The Problem and Some Possible Remedies*" is the subject of the January 24 issue of *Information Service*, the weekly publication of the Federal Council of Churches. This competent survey discusses Extent of Unemployment, Measures of Immediate Relief, Measures of Stabilization, Unemployment Insurance in the various countries in which it has been introduced, and Proposed Legislation on Unemployment. 11 pp. 15c. (Apply to the Department of Research and Education, Federal Council of Churches, 105 E. 22d St., New York.)

Playgrounds

The Annual Report of the 25th anniversary year (1929-1930) of the Los Angeles Department of Playgrounds and Recreation is an interestingly illustrated account of progress during the past year and of the recreation achievements of the city during the last quarter-century. 39 quarto pp., including maps, charts and graphs. (Apply to the Department, Los Angeles, Calif.)

Kentucky Cities

The "Kentucky City Directory, 1930," a supplement to *The Kentucky City*, November 22, 1930, is a handbook containing information about state officials; lists of county and city officers; city statistics; and data about urban public utilities. The Directory, compiled by the Bureau of Municipal Research, Lexington, and published by the Kentucky Municipal League, is believed to be the first of its kind. 148 pp. $2.00. (Apply to the League, Lexington, Ky.)

Regional Planning

"Population Trends—A Statement of the Effects of Population Trends upon Planning in the Philadelphia Tri-State District" is a handsomely printed report by the Population Committee of the Regional Planning Federation of the Philadelphia Tri-State District. Air views of Philadelphia, Camden, Trenton, Chester and Wilmington reinforce the facts presented, which emphasize the need of comprehensive regional planning to regulate the development of metropolitan regions. 32 quarto pp. (Apply to the Federation, 1700 Fox Bldg., Philadelphia, Pa.)

Traffic

"Some Facts About Traffic Congestion" are presented in a booklet issued by the American Electric Railway Association. Aided by striking black-and-white drawings, the arguments of the public transportation companies are put forward, urging the restriction of private motor cars and taxis and the encouragement of street cars and busses. 15 pp. (Apply to the Association, 292 Madison Ave., New York.)

Maintenance Costs on Buffalo, N.Y., Brick Streets

COST PER SQUARE YARD ON STREETS MAINTAINED

Year	Upkeep
'19-'20	$0.0249
'20-'21	0.0171
'21-'22	0.0204
'22-'23	0.0158
'23-'24	0.0133
'24-'25	0.0229
'25-'26	0.0397
1927	0.0024
1928	0.0099
Yearly Av.	0.0185

Photo by Underwood & Underwood

FOR the past 40 years, Buffalo, N.Y. has, through its Department of Public Works, Department of Engineering, kept accurate records on its pavement maintenance.

The above table compiled from the Department's Annual Reports shows the true cost of brick pavement on which the "10 year guarantee" has expired.

Note the low cost of brick upkeep!

It is from 4 to 6 times less than the maintenance on two other pavement types receiving comparable traffic.

Now for one specific—but not unusual—example. Franklin Street. It has carried Buffalo's heavy traffic for 37 years with an annual maintenance cost of only 1 cent per square yard.

Each passing year gives further evidence of the economy of brick. It lasts so long and costs so little because it withstands *weather* as well as traffic damage.

For additional information, address National Paving Brick Manufacturers Association, 1245 National Press Building, Washington, D. C.

VITRIFIED BRICK PAVEMENTS

Buildings

Buildings: Their Uses and the Spaces About Them—Regional Survey, Vol. V. Regional Plan of New York and Its Environs. New York. 1931. 465 *pp.* $3.00 *from* THE AMERICAN CITY. *The advance subscription for the complete series of the eight survey volumes and the two plan volumes, together with a copy of the map for mounting, is* $50 *from* THE AMERICAN CITY.

Volume VI of the Regional Survey is the last of the eight volumes in the Survey to be published. It comprises three monographs: "The Character, Bulk and Surroundings of Buildings," by Thomas Adams; "Housing Conditions in the New York Region," by Thomas Adams in collaboration with Wayne D. Heydecker; "Control of Building Heights, Densities and Uses by Zoning," by Edward M. Bassett. Harold M. Lewis and Lawrence M. Orton assisted in the preparation of the volume. An appendix to Monograph One gives data regarding the distribution of industrial plants in the Region. A discussion of the economic production of workingmen's homes is appended to Monograph Two, and a supplement listing zoning cases in the United States follows the third study.

Diesel Engines

Diesel Power Plant Handbook. 6th edition.—By Julius Kuttner. Diesel Power, *New York.* 1930. 290 *pp.* $5.00.

This is the 6th edition of what was formerly called the "Oil Engine Power Plant Handbook" and is by the editor of *Diesel Power*. It has an opening article on the position of the diesel engine in American industry, following which the textual contents consist of an Engine Room Guide of 110 pages, divided into 14 sections headed as follows: Properties of the Diesel Engine; Airless-Injection Fuel Sprays; Fuel-Injection Pumps; Air-Injection Fuel Sprays; Air-Injection Compressors; Four-Cycle Engine Valves; Two-Cycle Engine Details; Major Bearings; Pistons, Cooling and Maintenance; Piston Ring Action and Types; Exhaust Heat Recovery; Air Filtration; Centrifuging Oils; Lubricating Oils. The remainder of the book is taken up with catalog pages of diesel engine manufacturers and publicity material for other factors in the diesel power field.

Mechanical Refrigeration

The American Standards Association has approved, and publishes in a 31-page manual, the "American Standard Safety Code for Mechanical Refrigeration." The code "represents the results of ten years' exhaustive research and intensive study," and was formulated by a joint technical committee representing twenty-eight organizations operating under American Standards Association procedure and under the leadership of the American Society of Refrigerating Engineers. See also page 23 of this issue of THE AMERICAN CITY. (Apply to the Association, 29 W. 39th St., New York.)

Unemployment Emergencies

The Family Welfare Association of America has published two pamphlets dealing with ways of meeting some of the problems which arise in unemployment emergencies. "Care of the Homeless in Unemployment Emergencies—Suggestions for a Community Program," compiled by Harriet E. Anderson and Margaret E. Rich, draws on the experience of a large number of communities all over the country. Miss Rich also compiled "The Administration of Relief in Unemployment." Bibliographies are included in both of these pamphlets. 29 and 28 pp. respectively. 15c each. (Apply to the Association, 130 East 22d St., New York.)

Outdoor Cleanliness

The Committee of Twenty on Street and Outdoor Cleanliness, appointed by the New York Academy of Medicine, is performing a service of value to American cities generally as well as to New York. George A. Soper, Ph.D., has made two trips to Europe to study the cleaning of cities, for the Committee, and here reports on the second of these visits, under the title, "Further Studies of European Methods of Street Cleaning and Refuse Disposal, with Suggestions for New York." It is particularly concerned with two international congresses bearing on the subject, at Stuttgart and Dresden respectively, with incineration in Zurich and with city cleansing in Italy. 39 pp. Oct., 1930. (Apply to the Committee, 2 E. 103d St., New York.)

Franchises

With the decline in importance of local public-utility franchises since the war, as the companies have largely succeeded in relieving themselves of franchise restrictions by the means of state regulation, comprehensive discussions of franchises have been few, and no complete study has appeared in recent years. Dr. John Bauer, well-known public-utility consultant and director of the American Public Utilities Bureau, New York, has, however, prepared a monograph entitled "Standards for Modern Public Utility Franchises," which appears as a 36-page booklet, Publication No. 17 of the Municipal Administration Service. Dr. Bauer points out that state regulation is nowhere so successful that local franchise control can be dispensed with; and it is still necessary that carefully thought-out provisions for promoting and safeguarding the public interest be incorporated in franchises. The booklet gives consideration to such provisions, with due regard to the powers, advantages and shortcomings of state regulation, and presents new ideas in addition to long-established ones. 1930. 25c. (Apply to Municipal Administration Service, 261 Broadway, New York.)

Public Works Reserve

Otto T. Mallery, of Philadelphia, well-known advocate of the planning and execution of public works in such a way as to stabilize employment and industry, has prepared a pamphlet presenting a financial and administrative program for states and cities, to aid in carrying out the idea. (See page 5 of this issue). 8 pp. (Apply to the author, 225 South 15th Street, Philadelphia, Pa.)

Unemployment Relief

Brief reports of the unemployment relief programs in a number of the larger cities in the United States, as summarized by Community Chest and Chamber of Commerce executives, are published in the January number of *Community Leadership*, the bi-monthly organ of the American City Bureau. 5 pp. (Apply to the Bureau, Tribune Tower, Chicago, Ill.)

Junk Dealers

The model ordinance for the regulation of junk dealers prepared by the League of Wisconsin Municipalities, and a brief discussion of "The Regulation of Municipal Sales of Obsolete and Scrap Materials," by Joseph W. Nicholson, Purchasing Agent, Milwaukee, are printed together by the Municipal Administration Service of New York. 7 pp. 10c. (Apply to the Service, 261 Broadway, New York.)

Airport Buildings

The *Architectural Forum* for December, 1930, contains a 10-page illustrated article by Roger W. Sherman entitled "Planning for Airport Buildings," followed by a section of 28 pages illustrating terminal buildings and hangars in various parts of the country; a few airplane views and plans of fields are included. In the Architectural Engineering and Business Section of the same issue is another illustrated article by Mr. Sherman in 10 pages entitled "Airplane Hangars—Planning, Fire Protection, Construction Data." $3.00. (Apply to *Architectural Forum*, 525 Fifth Ave., New York.)

Free Parking

A folder issued by the Retail Merchants' Division of the Morristown, N. J., Chamber of Commerce is entitled "Free Automobile Parking" and is in the form of an invitation to Morristown shoppers. It contains names and addresses of seven garages in the shopping district and of 38 stores. Parking tickets stamped by any one of these stores will be accepted by the garages instead of cash payment. Settlement is made monthly between store and garage. The service is to encourage home shopping. (Apply to E. J. MacEwan, Secretary, Chamber of Commerce, Morristown, N. J.)

Building Code

The city of Belleville, Ill., adopted in 1930 a building code that has been carefully prepared by a Building Code Advisory Committee and the Zoning and Planning Commission of Belleville, and the Illinois Builders' League. This is printed in booklet form, the code taking up 53 pp. (Apply to P. D. Windsor, Building Commissioner, 28a Public Square, Belleville, Ill.)

Centralized Purchasing

Russell Forbes, Secretary of the National Municipal League, and consultant on governmental purchasing of the National Association of Purchasing Agents, has prepared a pamphlet on "Centralized Purchasing—A Sentry at the Tax Exit Gate" for the Association, in answer to many inquiries received "for information relating to the desirability and practicability of the application of centralized purchasing, so widely used in industry, to the procurement of supplies, materials and equipment for governmental agencies." Centralized purchasing in government is defined as "the delegation to one office of the authority to purchase supplies, materials and equipment needed for use by all the several branches of the organization." The advantages of the system are explained, with actual cases cited. 40 pp. (Apply to the Association, 11 Park Place, New York.)

Sanitarians

Articles on waste disposal, water supplies, milk sanitation, epidemiological and laboratory studies, and miscellaneous public health problems, comprise, with the summarized minutes, the "Proceedings of Eighth Annual Short School, Texas Association of Sanitarians," which assembled at Amarillo in August, 1930. Readers are warned that the volume contains opinions at variance with established standards, but that "someone may after all express a *new* thought that will hold water." 95 pp. $1.00. (Apply to the Association, Capitol Station, Austin, Texas.)

City Planning

The papers and discussions at the twenty-second National Conference on City Planning, held at Denver, Colo., June 23-26, 1930, have been published in book form under the title, "Planning Problems of Town, City and Region." Street and traffic planning, subdivision, airports, parks and publicity were among the subjects discussed. 239 pp. $3.00. (Apply to the Conference, 130 E. 22d St., New York.)

Regional Planning

The Second Annual Report of the Monroe County Regional Planning Board, covering the year 1930, is an attractively printed pamphlet describing the mapping of the region, the first step in the development of its planning program. The booklet is illustrated with views from the aerial survey which was made, as well as with maps showing traffic density, population density and transportation time. 32 pp. (Apply to the Board, Terminal Bldg., Rochester, N. Y.)

County Government

To present compactly the arguments, pro and con the county manager plan, Helen M. Muller has compiled material for "County Manager Government," No. 8 of Vol. VI of The Reference Shelf, published by the H. W. Wilson Co. The affirmative and negative sides of a debate on the subject, "Resolved, that the county manager plan is the best form of county government," are outlined, and supporting material is then presented. A bibliography and a model county manager law are included. 173 pp. 90c. (Apply to the H. W. Wilson Co., 950 University Ave., New York.)

Schoolmen's Salaries

For the first time since 1923 the Municipal Information Bureau of the University of Wisconsin has compiled "Salaries of High School Principals and City Superintendents of Schools in Wisconsin Cities." The figures were obtained in most cases in the office of the State Superintendent of Public Instruction from the official reports of the high school principals for the year 1929-1930. 6 mimeographed pp. 25c. (Apply to the Bureau, University Extension Division, Madison, Wis.)

Better Homes

Better Homes Week is scheduled this year for April 26-May 2. In preparation for local campaigns, a Guidebook for Better Homes Campaigns in Cities and Towns has been prepared by Better Homes in America. This includes a brief history of the Better Homes movement, a section devoted to "How to Organize a Local Campaign," and details about the 1930 campaign. Photographs illustrate prize-winning houses, rooms and accomplishments. 48 pp. 10c. (Apply to Better Homes in America, 1653 Pennsylvania Ave., Washington, D. C.)

MORE GRIP LESS SLIP

TRACKSON Crawler Tractors give push-type graders the kind of power and traction they need for new road construction and dirt road maintenance—surefooted, ground-gripping traction which makes the blade cut deep and clean in any soil. Differential gears in the rear end assure easy steering through the front wheels of the grader. There are no complicated clutch hook-ups . . . . no extra operations when turning. Hooking up the tractor to the grader frame is a simple matter. Wide clearance between the crawlers and motor—an exclusive Trackson feature—permits actual in-building of the grader frame, thus insuring correct control and best results at the blade. Let us give you full details. TRACKSON COMPANY, 1322 So. First St., Milwaukee, Wis.

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Other Reports Received

BOSTON, MASS.—Annual Address of Hon. James M. Curley, Mayor, January 5, 1931. 29 pp.

CLEVELAND, OHIO.—First Annual Report, Board of Zoning Appeals, from November 5, 1929, to January 1, 1931. 6 pp., mimeographed.

HANOVER, PA.—Borough Manager's Annual Report, 1930. 7 pp.

KENOSHA, WIS.—Annual Report, Director of Public Works, 1930. 25 pp., mimeographed, plus a number of charts.

MASSACHUSETTS.—Annual Report, Division of Housing and Town Planning, Department of Public Welfare, year ending Nov. 30, 1930.

OAKLAND, CALIF.—Annual Budget, fiscal year 1930-1931. 18 pp.

SLATER, MO.—Statement of Municipal Power and Water Department, for the year 1930. 1 p.

CONVENTIONS—WHEN AND WHERE

(Figures in parentheses following the name of the convention city indicate the estimated attendance, other than local.)

MARCH 2.—HURON, S. DAK.
South Dakota Commercial Secretaries' Association. Annual convention. Secretary, G. R. McArthur, Huron, S. Dak.

MARCH 4-6.—PRINCE ALBERT, SASK. (1,100)
Saskatchewan Association of Rural Municipalities. Annual convention. Secretary, J. J. McGurran, Nokomis, Sask.

MARCH 11-13.—WINDSOR, ONT. (300)
American Water Works Association—Canadian Section. Annual meeting. Secretary-Treasurer, A. U. Sanderson, Department of Public Works, City Hall, Toronto, Ont.

MARCH 12.—CHICAGO, ILL. (100)
Midwest Safety Conference. Manager, George G. Traver, Chicago Safety Council, 130 North Wells Street, Chicago, Ill.

MARCH 12.—CONCORD, N. H. (150)
New Hampshire Good Roads Association. Annual meeting. Secretary, Frank D. Sleeper, Laconia, N. H.

MARCH 16-22.—LOS ANGELES, CALIF. (25,000)
Oil Equipment and Engineering Exposition. General Manager, E. G. Lenzner, Alameda Boulevard and 131st Street, Los Angeles, Calif.

MARCH 20-21.—TRENTON, N. J. (250)
New Jersey Sewage Works Association. Annual convention. Secretary, John R. Downes, Bound Brook, N. J.

MARCH 26-28.—WEST PALM BEACH, FLA. (200)
Florida Engineering Society. Annual meeting. Secretary, W. W. Fineren, Gainesville, Fla.

MARCH 31-APRIL 3.—WEST PALM BEACH, FLA.
American Water Works Association — Florida Section. Annual meeting. Secretary, E. L. Filby, P. O. Box 135, Jacksonville, Fla.

APRIL 7-9.—COLUMBIA, S. C. (250)
American Water Works Association—Southeastern Section. Annual meeting. Secretary-Treasurer, W. H. Weir, 4 Capitol Square, S. W., Atlanta, Ga.

APRIL 9-10.—ANACONDA, MONT.
American Water Works Association—Montana Section. Annual meeting. Secretary, Herbert B. Foote, State Board of Health, Helena, Mont.

APRIL 12-27.—MILAN, ITALY.
International Exhibition for the Safety of Highway Traffic. Address: The Royal Automobile Club of Italy, Corso Venezia, 69, Milan, Italy.

APRIL 14-17.—WASHINGTON, D. C.
National League of Women Voters. General council meeting. Executive Secretary, Miss Gladys Harrison, 532 17th Street, N. W., Washington.

APRIL 15.—NORFOLK, VA.
American Society of Civil Engineers. Annual spring meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

APRIL 20-23.—BIRMINGHAM, ALA.
American Society of Mechanical Engineers. Semi-annual meeting. Secretary, C. W. Rice, 29 West 39th Street, New York.

APRIL 20-21.—MARLIN, TEXAS. (5,000)
East Texas Chamber of Commerce. Convention. Secretary, Hubert M. Harrison, Longview, Texas.

APRIL 20-26.—MILAN, ITALY.
International Congress of Sanitary Engineering and Municipal Hygiene. General Secretary, Charles Rauch, Engineer, Piazza Del Duomo N. 17, Milan, Italy.

APRIL 21-24.—TORONTO, ONT.
Building Officials' Conference. Secretary-Treasurer, Col. John W. Oehmann, Inspector of Buildings, District Building, Washington, D. C.

APRIL 22-23.—TROY, N. Y. (125)
American Water Works Association—New York Section. Spring meeting. Secretary, E. D. Case, The Pitometer Co., 50 Church Street, New York.

APRIL 23.—NEWARK, N. J. (300)
Eastern Safety Conference. Manager, Fred M. Rosseland, Newark Safety Council, 141 Halsey Street, Newark, N. J.

APRIL 23-24.—ROANOKE, VA. (125)
Southern Commercial Secretaries' Association. Annual meeting. Secretary-Treasurer, Karl Lehman, Orange County Chamber of Commerce, Orlando, Fla.

APRIL 28-29.—BLOOMINGTON, ILL. (100)
American Water Works Association—Illinois Section. Annual convention. Secretary, Professor J. J. Doland, University of Illinois, Urbana, Ill.

APRIL 28-MAY 1.—ATLANTIC CITY, N. J. (3,000)
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, 1615 H Street, N. W., Washington, D. C.

APRIL 29-30.—BOSTON, MASS.
Massachusetts Safety Conference. Secretary, Lewis E. MacBrayne, 6 Beacon Street, Boston.

MAY 4-9.—WASHINGTON, D. C. (2,000)
International Chamber of Commerce. Biennial congress. Manager of the American Section, John P. Gregg, Connecticut Avenue and H Street, N. W., Washington, D. C.

MAY 5-6.—WILMINGTON, DEL.
Maryland-Delaware Water and Sewerage Association. Annual conference. Secretary, A. W. Blom, 2411 North Charles Street, Baltimore, Md.

MAY 9.—PARIS, FRANCE. (150)
Association of Garden Cities of France. International Association of Lineal Cities. Annual meeting. Director, Georges Benoit-Lévy, "L'Etoile," Pessicart, Nice, France.

MAY 14-16.—VANCOUVER, B. C.
American Water Works Association — Pacific Northwest Section. Annual meeting. Secretary, Ernest C. Willard, 720 Corbett Building, Portland, Ore.

MAY 25-29.—PITTSBURGH, PA. (1,000)
American Water Works Association. Annual convention. Secretary, Beekman C. Little, 29 West 39th Street, New York.

JUNE 1-5.—BERLIN, GERMANY. (1,000)
International Federation for Housing and Town Planning. Congress. Organizing Secretary, H. Chapman, 25 Bedford Row, London, W. C. 1, England.

JUNE 1-5.—BERLIN, GERMANY. (1,000)
International Housing Association. Congress. General Secretary, Dr. Hans Hampffmeyer, Hansa Alee 27, Frankfurt am Main, Germany.

JUNE 3-5.—ASHEVILLE, N. C. (250)
American Forestry Association. Annual meeting. Executive Secretary, Ovid Butler, 1727 K Street, N. W., Washington, D. C.

JUNE 8-11.—TORONTO, ONT.
National Association of Purchasing Agents. Annual convention and Informashow. Secretary-Treas., G. A. Renard, 11 Park Place, New York.

JUNE 16-18.—TORONTO, ONT.
International Association of Comptrollers and Accounting Officers. Annual meeting. Secretary, Carl H. Chatters, Director of Finance, City Hall, Flint, Mich.

JUNE 17-19.—REGINA, SASK. (200)
Canadian Public Health Association. Annual meeting. General Secretary, Dr. J. T. Phair, Spadina House, Toronto, Ont.

JUNE 21-22.—WISCONSIN RAPIDS, WIS.
Wisconsin Association of Commercial Secretaries. Annual meeting. Secretary-Treasurer, Lee I. Yorkson, Wausau, Wis.

JUNE 22-26.—ASHEVILLE, N. S. (550)
American Institute of Electrical Engineers. Annual summer convention. National Secretary, F. L. Hutchinson, 33 West 39th Street, New York.

JUNE 22-23.—LAKE WORTH, FLA. (30)
Florida Commercial Secretaries' Association. Annual convention. Secretary-Treasurer, George F. Sampson, Winter Haven, Fla.

JUNE 22-24.—ROCHESTER, N. Y.
National Conference on City Planning. Annual. Secretary, Flavel Shurtleff, 130 East 22nd Street, New York.

JUNE 23-25.—DURANGO, COLO. (75)
Colorado Municipal League. Annual meeting. Secretary-Treasurer, Don C. Sowers, University of Colorado, Boulder, Colo.

JUNE 23-26.—BOSTON, MASS.
New England Association of Fire Chiefs. Annual convention. Secretary-Treasurer, John W. O'Hearn, 99 Main Street, Watertown, 72, Mass.

JUNE 27-JULY 4.—LOS ANGELES, CALIF. (10,000)
National Education Association of the United States. Annual meeting. Secretary, J. W. Crabtree, 1201 16th Street, N. W., Washington, D. C.

AUGUST 18-20.—COUNCIL BLUFFS, IOWA.
League of Iowa Municipalities. Annual meeting. Secretary-Treasurer, Frank G. Pierce, Marshalltown, Iowa.

SEPTEMBER 24-26.—NEW YORK. (150)
International Association of Public Works Officials. Annual convention. Secretary, A. M. Anderson, 100 North LaSalle Street, Chicago, Ill.

SEPTEMBER 26-OCTOBER 2.—ATLANTIC CITY, N. J.
American Electric Railway Association. Golden anniversary convention. General Secretary, Guy C. Hecker, 292 Madison Avenue, New York.

OCTOBER 5-9.—TORONTO, ONT. (600)
National Recreation Association. Annual congress. Secretary, Howard S. Braucher, 315 Fourth Avenue, New York.

OCTOBER 7-10.—LOUISVILLE, KY. (250)
International City Managers' Association. Annual convention. Executive Secretary, Clarence E. Ridley, 923 East 60th Street, Chicago, Ill.

OCTOBER 12-13.—MONTEREY, CALIF. (150)
California Sewage Works Association. Annual convention. Secretary, Prof. E. Reinke, Life Sciences Bldg., University of California, Berkeley.

OCTOBER 12-15.—ST. PETERSBURG, FLA. (400)
International Association of Chiefs of Police. Annual convention. Secretary, George Black, Chief of Police, Wilmington, Del.

OCTOBER 12, WEEK OF.—CHICAGO, ILL. (7,000)
National Safety Council. Annual congress. Managing Director, W. H. Cameron, 20 North Wacker Drive, Chicago, Ill.

OCTOBER 14-17.—HAVANA, CUBA. (1,200)
International Association of Fire Chiefs. Annual convention. Secretary, James J. Mulcahey, Fire Chief, Yonkers, N. Y.

OCTOBER 15.—CHICAGO, ILL.
Institute of Traffic Engineers. Annual meeting. Secretary-Treasurer, Hawley S. Simpson, 292 Madison Avenue, New York.

OCTOBER 18-21.—TOLEDO, OHIO. (325)
National Association of Commercial Organization Secretaries. Annual convention. Secretary-Treasurer, Gerrish Gassaway, Chamber of Commerce, Wilmington, Del.

OCTOBER 19-23.—PITTSBURGH, PA. (200)
American Society of Municipal Engineers. Annual convention. Secretary, C. W. S. Sammelman, 4359 Lindell Boulevard, St. Louis, Mo.

OCTOBER 27-30.—JACKSONVILLE, FLA. (300)
International Association of Municipal Electricians. Annual convention. Secretary, W. H. Harth, Columbia, S. C.

NOVEMBER 9-10.—BUFFALO, N. Y.
National Municipal League. Annual convention. Secretary, Russell Forbes, 261 Broadway, New York.

"THE MODERN WAY TO USE ASPHALT"

Bitumuls *Penetration* pavement . . . 3 in. on gravel base. Rhode Island State Highway. No bleeding or corrugating.

Bitumuls *Full-Penetration*, one-course, 6 in. thick. Waterproof, non-skid. California State Highway.

Bitumuls *Armorcoat* surface, on heavily traveled street, in Huntington Beach, Calif. A renewed pavement surface at nominal cost.

Patching deep depressions with Bitumuls. Anaheim, Calif. Quicker . . . cheaper . . . no heating.

Bitumuls *Armorcoat*, in Missouri. University City, Olive Street Road.

for

DURABLE WEARING SURFACE

•

ARMOR COAT

•

FULL PENETRATION PAVEMENT

•

RETREAD & ROAD MIX

•

MAINTENANCE

Full information regarding "The Modern Way to Use Asphalt" available in Bitumuls Bulletins. Send for free copies. American Bitumuls Company, 200 Bush Street, San Francisco.

Bitumuls *Road-Mix*, in Idaho. Rapid, easy mixing. Work can be done in damp weather.

BIT-U-MULS

Executive Offices: SAN FRANCISCO

Factory and Offices: BOSTON · BALTIMORE · CINCINNATI · ST. LOUIS · BATON ROUGE · LOS ANGELES · PORTLAND, ORE.

Mention THE AMERICAN CITY—it helps.

NEWS AND ILLUSTRATIONS

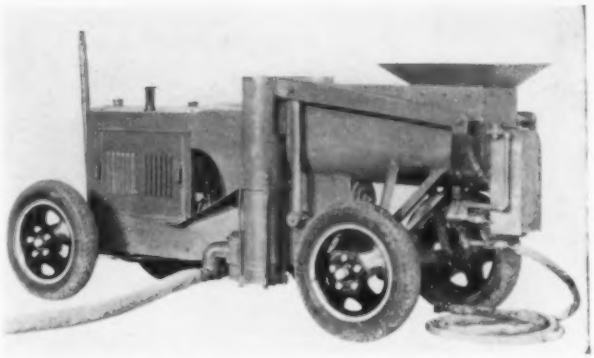
Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

A Quarter-Size Complete Crushing and Screening Plant

Not that a quarter-size plant would be particularly practicable for a municipal or county to purchase, but the fact that the Good Roads Machinery Co., Kennett Square, Pa., has demonstrated its line of crushing and screening plants admirably at recent highway and crushed stone conventions in this manner leads us to tell our readers more about it. The whole plant is complete in detail and is built on a quarter scale, or three inches to the foot. The large plant after which this is modeled consists of a No. 6 Champion primary crusher, a No. 1030 Champion roller-bearing reduction crusher, a Champion belt-type bucket elevator with 18-inch buckets, a 51-inch diameter by 20-foot-long Champion heavy-duty roller screen and the various transmission units.

The model plant is operated by two Westinghouse motors. One is placed on the superstructure near the head of the elevator and is used to drive the elevator and screen. The crusher is operated by the other motor, and both transmissions from motors to countershafts are through Morse silent-chain drives.

This model plant is so constructed that it will crush stone in the same manner as the large plant. Because of the dust formed by the crushing operation, it is not possible to put very much stone through the plant at one time when it is on exhibition. Those who were visiting this plant which was exhibited at the Road Show of the American Road Builders' Association were able to reach over the platform of Knobby non-skid floor plates furnished by the Central Iron & Steel Co., Harrisburg, Pa., and pick up a piece of rock and toss it into the small crusher. Immediately it was crushed and started up the bucket elevator, through the cylinder screen, and the oversize came chuting back to the miniature crusher. This model plant attracted a great deal of attention, and the non-skid platform was well peopled most of the time with full-size road builders, examining the plant carefully.

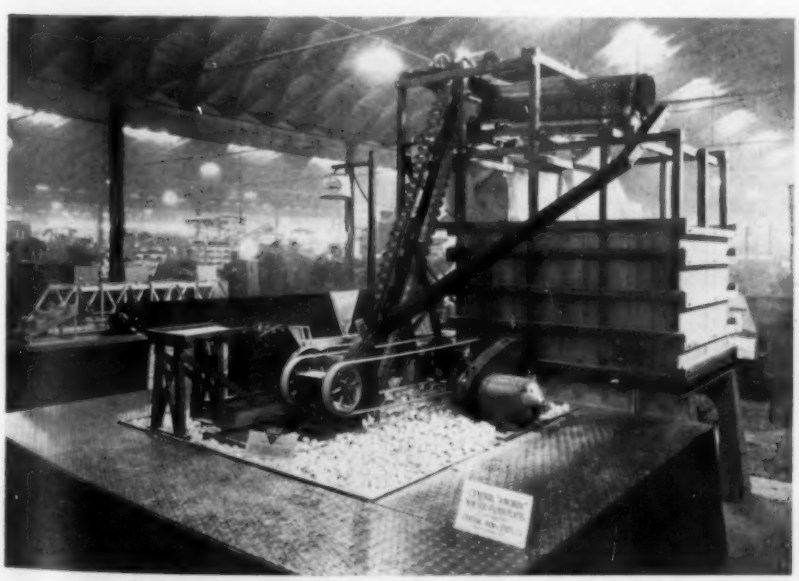


THE MUD-JACK, A COMBINATION MIXER AND PUMP

New Device Corrects Settlement Under Rigid Type Pavement

A new device for raising sunken pavements has been announced by the National Equipment Corporation, Milwaukee, Wis. The maintenance of rigid types of pavements by the correction of settlement is a problem of hard-surfaced road construction which is demanding the increasing attention of highway and street maintenance departments.

The N.E.C. Mud-Jack is a combination mixer and pump which corrects the pavement level by forcing the mixed mud through holes cut in the slab. Top soil and water are mixed with just enough cement to take up the shrinkage, usually about one bag of cement to a yard of dry materials. This mixture is pumped through holes drilled in the slab, the pressure in the pump being sufficient to force the mud under the slab, causing it to rise. Normally, about three holes are drilled for each 8 feet of 18-foot road slab. Pavements in which dips of from 1 inch to 18 inches in depth occur can be returned to their original grade easily. The pressure required to raise the slab is low. The use of this Mud-Jack makes possible the maintenance of pavements with a minimum delay to traffic and at costs well below the expense of adding a bituminous carpet by tearing out and replacing the pavement. Subsequent settlements due to continued readjustment of the grade may be picked up economically at a future time.



THE GOOD ROADS MODEL PLANT AS EXHIBITED IN ST. LOUIS AT THE ROAD SHOW

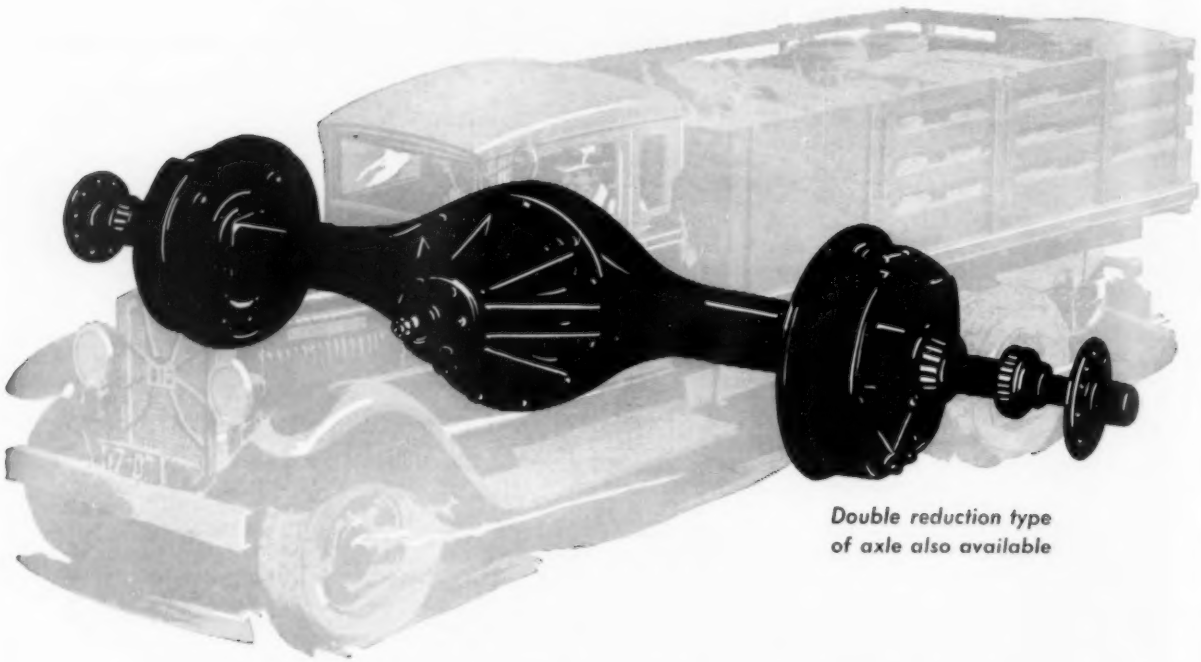
New Sales Engineer for Hydrauger Corporation

W. A. Kohlhoff has been appointed Sales Engineer for the Hydrauger Corporation, Ltd., 1298 Bryant Street, San Francisco, Calif. Mr. Kohlhoff has been in the Gas Engineering Department of the Pacific Gas & Electric Co. for the last ten years, having been with the Coast Valleys Division of that company before taking up his new work. He has also served in the North Bay and the San Francisco divisions of the Pacific Gas & Electric Co.

As Sales Engineer of the Hydrauger Corporation, Mr. Kohlhoff soon will make a business tour of the United States to establish distributing agents for the Hydrauger on the Atlantic Coast, in the South and the Middle West. The Hydrauger is a hydraulic auger for boring horizontally under streets, highways, etc., avoiding pavement cuttings almost entirely.

New Yeomans Distributor

The Yeomans Bros. Co., 1433 Dayton Street, Chicago, Ill., has announced the appointment of the Jackson Engineering Co., 934 Architects and Builders Building, Indianapolis, Ind., as its representative in that territory.



Double reduction type of axle also available

AXLES FOR HEAVY-DUTY WORK

From front bumper to rear frame cross-member, Dodge Heavy-Duty Trucks are "all-truck"—expertly-designed and precision-built for gruelling work.

The rear axle, for instance, is the full-floating type. Weight of truck and load is carried by the housing—shafts are free to transmit power solely. Drive is through spiral bevel gear. Pinion gear is straddle-mounted for greater strength and permanent alignment. All gears are of finest nickel alloy steel. There are nine large adjustable roller bearings in all—two at outer end of each shaft. Housing of the banjo type is of electric furnace steel.

• • •

See your Dodge Brothers dealer. See Dodge Heavy-Duty Trucks. Inspect them and compare them. You can buy the type for your needs complete with standard or special body to fit.

THE COMPLETE LINE OF DODGE TRUCKS RANGES IN PAYLOAD CAPACITIES FROM 1,200 TO 11,175 POUNDS—PRICED, CHASSIS F. O. B. DETROIT, FROM $435 TO $2695, INCLUDING 1½-TON CHASSIS AT $595

DEPENDABLE DODGE HEAVY DUTY TRUCKS

Ahrens-Fox Officers

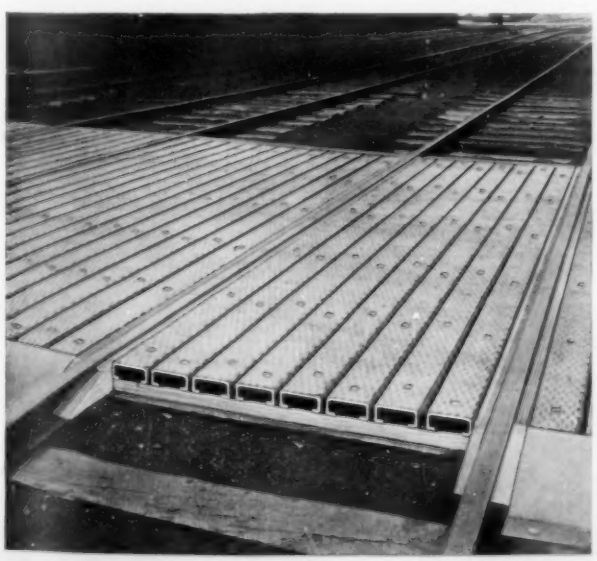
The Ahrens-Fox Engine Co., Cincinnati, Ohio, has announced the election of Frank C. Deckebach to its Board of Directors, in place of John P. Ahrens, retired. The present Board of Directors includes Charles H. Fox, Warren E. Keplinger, August H. Teuchter, Henry G. Frost, Harry Weil, W. H. Shafer and Frank C. Deckebach.

At the first meeting of the new Board, the old officers were elected, with the exception that August A. Teuchter, President of the Cincinnati Bickford Tool Co., was elected Vice-President, succeeding John P. Ahrens. Mr. Teuchter also becomes a member of the Executive Committee, composed of Warren E. Keplinger, Managing Director, Charles H. Fox, President and Treasurer, and August H. Teuchter, Vice-President.

All-Steel Highway Crossings

Truscon all-steel highway crossings consisting of heavy, checkered-steel plates designed to withstand the heaviest loads, which are laid parallel to the rails and securely spiked in place, are manufactured by the Truscon Steel Co., Youngstown, Ohio. The standard plates are ¼-inch thick, 5½ inches wide, 3 inches high, and 9 feet long, but any length up to 18 feet may be provided. The plates are brought flush to the top of the rails by means of sleepers, and electrical insulation is secured by the use of creosoted oak or asphalt as a filler between the rails and the plates.

Protection against dragging brake rods and similar dangers is provided by pressed steel guards which cover the ends. The spike heads sink into specially formed recesses, leaving the road surface entirely smooth. The material is easily stocked, for the plates and guards are standard in size and section. The plates can be removed and relaid easily when repairs to the roadbed are necessary, requiring only ordinary labor.



AN INSTALLATION OF TRUSCON ALL-STEEL HIGHWAY CROSSING

St. Louis Airport Installs AGA Equipment

Early in 1930 the officials in charge of Lambert Field, the municipal airport at St. Louis, Mo., issued invitations to all manufacturers of landing field floodlights to install representative floodlighting systems on the airport for competitive tests.

Upon the completion of the installations of the latest types of system produced by all of the manufacturers of present-day floodlights, there followed a most comprehensive series of tests. For two weeks these tests were conducted under various weather and flight conditions. The pilots and operators endeavored to select the system which gave the field the nearest to daylight appearance, the least glare, and the most uniform intensity of illumination over the entire area.

Upon compiling the results of the tests, it was found that the requirements were most closely met by the system employing the high-intensity, full-automatic arc in a large dioptric lens. Relying on the results of the test, the city of St. Louis has purchased and installed a Sperry-AGA floodlight using the 150-ampere arc in a 1,000-mm. dioptric lens, from the American Gas Accumulator Co., Elizabeth, N. J.

Reflecting Warning Signs

Reflecting signs for boulevards, state arterial highways, detours, curves, grade-crossings, obstructions, embankments and dead-end streets have been developed by the Louisville Frog, Switch & Signal Co., Louisville, Ky.

The reflectors or lenses, frequently referred to as "buttons," used in the construction of these Reflex signs are solid pieces of glass scientifically designed and constructed so as to provide great strength and superior reflecting qualities. Rays of light from a motor vehicle or other source entering the lens from almost any angle are returned with over 75 per cent of their original intensity directly to the source of light.

The signs can be furnished in any design or lettering required. The backplates, which are usually 24-inch size, are of No. 16 gage steel galvannealed or the equal, while the housing or portions containing the buttons are of cast aluminum. Both materials are embossed with the letters and designs raised 1/16-inch. This not only facilitates repainting but also adds to the strength of the sign. In the railroad warning signs, the two "R's" are aluminum castings, assembled completely, with fourteen reflectors in each and securely fastened to the steel plate. The letters are 6 inches high and in this particular sign extend 1¼ inches from the face of the surface of plate. The reflector units can be furnished in any color. The solid glass pieces have no metal parts exposed, as the reflector or mirror is permanently and hermetically sealed within the glass housing, and deterioration by tarnish or rust cannot occur.

CURVE SIGN WITH REFLEX ARROW

The arrow in the "Curve" sign contains 19 reflectors. It is also a two-piece aluminum casting held together by brass screws and nuts, which are especially designed to prevent theft. Arrows are furnished for either right- or left-hand erections and can easily be placed on signs that are already installed, without removing the signs from service. The 24-inch octagon "Stop" sign has mounted on it an aluminum "Stop" plate or housing, all in accordance with standards of the American Association of Highway Officials. The word "Stop" is studded with 55 reflector buttons or units and is furnished with or without embossed letters denoting "through street," "arterial highway," "through traffic," etc.

Henry D. Winton of Hersey Mfg. Co. Dies

Henry D. Winton, who had been associated with the Hersey Manufacturing Co., South Boston, Mass., for 45 years, passed away at his home in Wellesley Hills, Mass., on Friday, January 23, 1931, in his seventy-fifth year.

In 1885 Mr. Winton became associated with the Hersey Manufacturing Co., and at the time of his death he was its Secretary as well as a member of the Board of Directors. His many inventions and his vast knowledge of the art made him dean of that group of men who have done much to place the water-meter industry on a sound basis.

Carey Elastite

Expansion Joint

"arrived when promised"

YANT CONSTRUCTION COMPANY
GENERAL CONTRACTORS
OMAHA NATIONAL BANK BUILDING
TELEPHONE ATLANTIC 9880
OMAHA, NEB.

Nov. 20, 1930

Philip Carey Company,
Keeling Bldg.,
Omaha, Nebraska

Attention: Mr. Sutherland

Gentlemen:

We wish to take this opportunity of expressing our appreciation for the good service you gave us in connection with furnishing us with material for our Blondo Street paving job. The material arrived on the job on exactly the day you promised us it would be delivered to us. Considering the short time in which you had to make shipment of this material we feel that the service rendered in this particular case was unusual.

Youre very truly,
YANT CONSTRUCTION COMPANY

HFW:B

Blondo Street, Omaha, Neb.

Road builders need quick service, and CAREY service is built to fill the need. CAREY Elastite Expansion Joint — the Felt Side Joint — so perfectly satisfied the need for concrete paving expansion joint that its use became nation-wide when it was introduced, nearly twenty years ago. Guided by this long experience, CAREY built a seasoned distribution organization — men who know the service road builders must have, and who deliver it.

That is why CAREY service is depended on, just as confidently as Elastite Expansion Joint itself; both have been proved by the only real test — performance. Now is a good time to order your spring requirements of CAREY Elastite Joint, thus insuring that the material will be on the job when the concrete is poured.

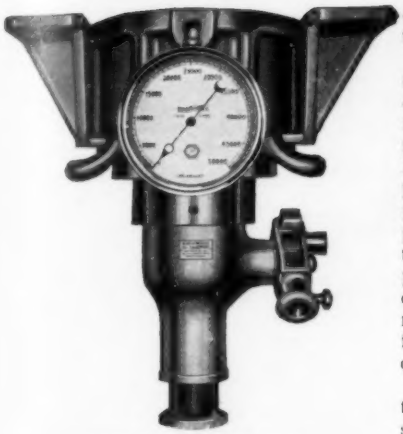
Write for 1931 price list and trade discounts.

THE PHILIP CAREY COMPANY x Lockland, Cincinnati, Ohio
Branches in Principal Cities

BUILT-UP ROOFS
ASPHALT PRODUCTS
ELASTITE EXPANSION JOINT
WATERPROOFINGS
ROOF PAINTS

Carey PRODUCTS

HEAT INSULATIONS
ASBESTOS MATERIALS
CAREYSTONE CORRUGATED SIDING
ASFALTSLATE SHINGLES
BUILDING PAPERS



50,000-POUND CAPACITY TEST LOADOMETER

Testing Concrete and Tile Products

Two new Test Loadometers have recently been brought out by the Black & Decker Manufacturing Co., Towson, Md., for testing the compressive strength of concrete and tile products. These machines are of highest quality, strong and easy to operate. The ratchet lever type of operation enables pressure to be applied uniformly through the entire testing range.

The 25,000-pound capacity Test Loadometer weighs 52 pounds, and is 11½ inches in height. The screw travels 3 inches.

The 50,000-pound capacity machine has a weight, including brackets, of 158 pounds. Its over-all height is 18 inches and it has a base diameter of 11 inches. The plunger travels 5 inches.

A Cold-laid Bituminous Concrete

For new construction, or for resurfacing old asphalt, brick, concrete, macadam or other types of worn and damaged pavements, railroad crossings, bridge floors, aviation fields, tennis courts, playgrounds, auto parking areas, maintenance and repairs, the Macasphalt Corporation of America, 381 Fourth Avenue, New York, developed Macasphalt.

This is a bituminous paving material produced by the blending of coarse or fine aggregates with fillers as used in the manufacture of standard hot type mixtures and incorporated with Macasphalt bituminous cement. These mixtures possess the property of being transported, laid and rolled at air temperatures during construction or placed in storage for indefinite periods. The mixtures are resilient, stable, and durable, and present abrasive non-skid surface textures.

This is not a cut-back type, but is composed entirely of asphaltic bitumens. It is mixed hot at central plants to insure uniformity of coating of the aggregate and is of such character that excessive stickiness is eliminated. It can be readily unloaded from railroad cars by machine or by hand labor into storage or directly into trucks for transportation to the location of operations.

The usual asphalt crew on new construction or the resurfacing of worn areas of roadways should be able to readily unload, haul and lay approximately 2,500 to 4,000 square yards of Macasphalt wearing surface complete in place, 1½ inches in thickness after compression, daily. It is only necessary to properly seal the surface after the mixture has been unloaded and raked into place, by the application of one rolling during the day's operation. Subsequent rolling to insure a smooth and even surface can be done within the week's operation.

In surfacing new streets and roads, these mixtures may be laid on any substantial foundation of concrete, broken stone, lime rock or standard type of foundation. No binder course is necessary when the foundation is true to grade and cross-section, owing to the plastic and adhesive qualities of the mixture.

When resurfacing rigid and unit types of paving, a slight application of asphalt paint coat is desirable to effect perfect binding qualities. On flexible foundations such as stone or gravel macadam, ordinary depressions may be cushioned with Macasphalt binder mixture, unless the foundation is in such condition as to warrant scarifying and reshaping.

Repairs made with Macasphalt can be opened to traffic immediately, barricades and their attendant inconveniences being entirely unnecessary.

Culverts Coated with Lead

In industrial localities where culverts must carry waters from streams heavily charged with acids, Leadclad culverts made by the Leadclad Steel Corporation, Glen Dale, W. Va., are particularly efficient.

Leadclad culverts are formed from full-weight steel sheets using boiler type construction with overlapped side seams and end locks. Then, after forming, the culvert is protected by the exclusive Leadclad process, by which a thick, heavy coating of pure lead is applied to both inner and outer surfaces.

These culverts are shipped ready to install, except when longer than standard lengths are required. The usual method of installation is to prepare the ditch, rolling the culvert into place. In concrete work, a popular style of construction utilizes the culvert as the concrete form, an advantage in time- and money-saving by eliminating the use of wood forms.

The use of Leadclad connecting bands makes for ease of installation. The bands are quickly slipped over a joint with a generous lap, and the bolts tightened to make a tight joint. To prevent damage to the ends of the culvert after installation, these culverts are furnished with a reinforcing bead. Heavy vehicles running over the culvert while in the ground will not dent it.

Ballin Retires as President of McIntosh & Seymour

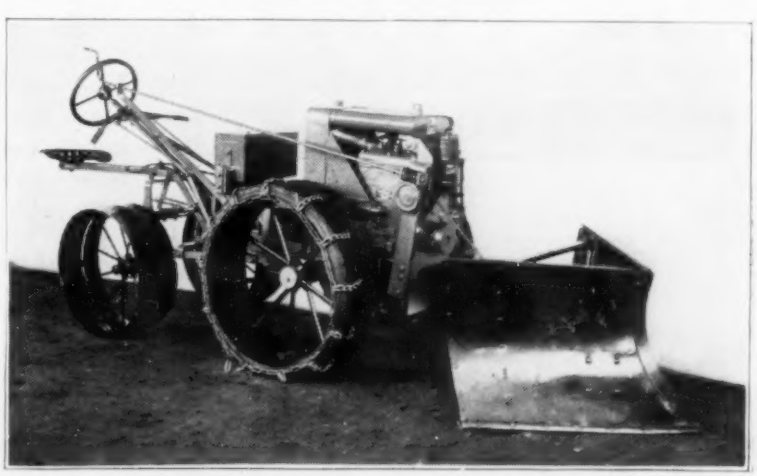
William C. Dickerman, Chairman of the Board of McIntosh & Seymour Corporation, has announced the retirement of A. E. Ballin, effective February 1, 1931, as President and Director of the Corporation. At a meeting of the Board of Directors on February 2, R. B. McColl was elected President and Director of the corporation to succeed Mr. Ballin.

Mr. McColl has held several positions with the American Locomotive Co. In 1925 he was appointed Manager of the Schenectady plant, which position he held until his present promotion.

A New Sidewalk Snow-Plow

A motor-driven sidewalk plow, designed to perform the work of slower and less efficient horse-drawn plows, has been announced by the Centaur Tractor Corporation, Greenwich, Ohio.

The Centaur sidewalk plow is a V-type plow mounted in front of the power unit, and is raised and lowered for clearing curbs by a very simple, easily operated lifting mechanism, handled from the driver's seat. The tractor is equipped with a 2-cylinder, 12-horsepower LeRoi motor and runs on dual hard-rubber tires. This plow is also suited to the needs of park and suburban districts, estates and industrial plants.



THE CENTAUR TRACTOR-POWERED SIDEWALK PLOW

Grateful Taxpayers and Voters

HERE'S a newly surfaced road in a western city — being rapidly and skilfully speeded to completion. "Caterpillar" Tractors play a spectacular part in cutting costs and fighting weather hazards. Motorists, taxpayers and voters are quick to approve efficient hurry in spreading smooth roads before them — and many know that when "Caterpillar" equipment is on the job the detour sign will not be up long!

CATERPILLAR
REG U.S. PAT. OFF.
TRACTOR

Prices—f. o. b. Peoria, Illinois

TEN	$1100	TWENTY	$1900
FIFTEEN	$1450	THIRTY	$2375
		SIXTY	$4175

Caterpillar Tractor Co.
PEORIA, ILLINOIS, U. S. A.

Track-type Tractors Combines Road Machinery
(There's a "Caterpillar" Dealer Near You)

Do you mention THE AMERICAN CITY? Please do.

Guard Windows for Prisons

The New York House of Detention for Women in New York City has been equipped throughout with Bayley windows for prisons, including 3670 Bayley screens, which are an integral part of the window. These windows, made by William Bayley Co., North Street, Springfield, Ohio, have a total absence of penal atmosphere, giving the appearance of small panes, rather than bars. They provide an efficient window, as well as a guard.

The assembly of small openings gives adequate daylight, and at the same time increases the strength of the window, and the ventilator does not impair safety. They have been designed in cooperation with prison architects and officials and are available in sizes to fit the smallest as well as the largest wall openings.

THE BAYLEY GUARD WINDOW

These windows are made in either super bar or 1½-inch standard tee bar construction, with the horizontal and vertical bars continuous through the ventilator opening.

A Cold-laid Asphalt Pavement

An asphaltic road material which is manufactured by an entirely cold process and is handled and laid cold is made by Colprovia Roads, Inc., 52 Broadway, New York. The coarse aggregate may be either granite, trap rock, limestone or any other clean, hard stone, and the fine aggregate may be crushed rock, preferably limestone or fine asphalt sand. The aggregate must be so selected that it shall be initially stable for whichever type of Colprovia is to be made. If the aggregate is received in a dry state, it is preferable that it should not be passed through a dryer, as the best results have been obtained from material at ground temperature. If, however, it is received in a wet condition, it is permissible to dry it, provided the temperature of the material when delivered to the mixer is not higher than 100 degrees Fahrenheit. Any standard dryer is suitable for this purpose if it employs the principle of passing a large volume of warm air over and through the aggregate as it falls from the lifting plates of a rotating drum.

Suitable filler is required for all wearing courses and, for this, finely powered limestone is reccommended. The asphalt cement is made of two components, of which the first is a carefully selected flux oil refined from asphaltic crude and capable of complete amalgamation with the second, which is a grade of asphalt hard enough to be reduced to a fine powder in an impact mill.

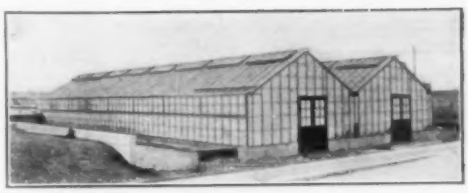
The principle underlying the selection of the asphalt cement is that, to some extent in the mixer but mostly under the roller and under traffic, the flux oil shall combine with the whole of the hard asphalt to produce a resultant asphalt cement of the required penetration, which may be varied to suit the climate in which it is to be laid.

In manufacture the dry cold aggregate is led through screens to storage bins, and from there it is delivered to a weighing apparatus, from which it is discharged to a standard type mixer. To the correctly proportioned aggregate and filler is added a known weight of flux oil, and these ingredients are mixed together until every particle of the aggregate has been entirely coated with the oil. At this stage a weighed quantity of the finely powdered asphalt is added, and the mixing is continued until the powdered asphalt is evenly distributed throughout the mix. The Colprovia is then ready for discharge from the mixer. The entire mixing operation takes about a minute and a half.

The Colprovia when delivered to the road is spread in the same manner as any other type of asphaltic pavement. It is not necessary to apply the roller immediately, and thus bad laying is avoided as the rakers have ample time to drop back to correct any inequalities in the freshly spread pavement. The material may be rolled with a heavy roller at any time convenient or desirable in the course of the day's work, and as soon as the roller has passed over it the road may be opened to traffic. Consolidation of the pavement by further rolling may be continued on the day after the laying, and this is good practice. Final consolidation takes place under the action of the traffic.

Steel Frame Glass Covers for Sludge Beds

The past year has shown a remarkable increase in the number of sewage treatment plants constructed in which the sludge beds have been covered to make them more effective as drying units. In cases where a sewage treatment plant must be increased, the original sludge beds can be merely glassed over and made more effective without extending their area. Other plants are now housing their sprinkling filters, so that they may be more effective in winter and the nuisance of the sewage fly may be controlled in summer.

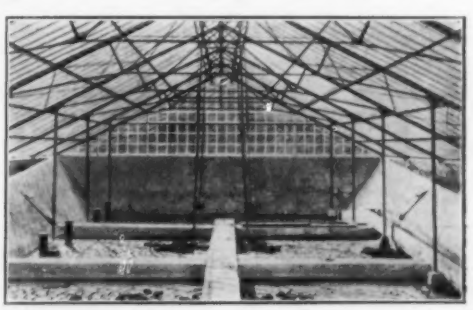


EXTERIOR OF AMERICAN-MONINGER SLUDGE COVER

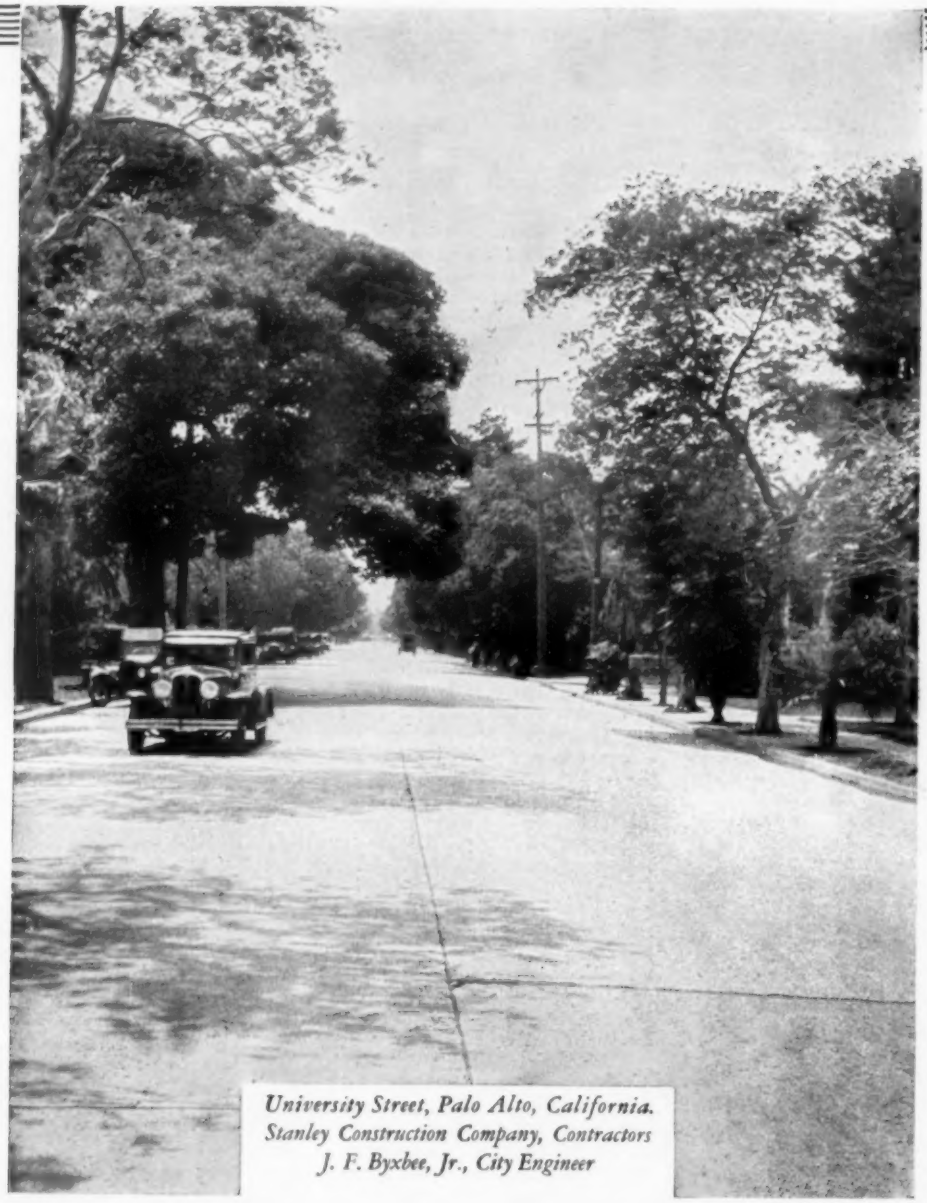
The American-Moninger Greenhouse Manufacturing Co., 1365 Flushing Avenue, Brooklyn, N. Y., manufacturers of American-Moninger greenhouses, are supplying many of these structures for housing sludge beds in different parts of the country. The feature of these greenhouses is the all-steel, all-riveted frame which uses standard structural members. Steel columns are used, bolted or riveted to the trusses, making a solid one-piece truss. Up to and including trusses of 39 feet span, all work is shop riveted. In addition to the truss being of steel, all the purlins are channels or angles and the ridge is of steel. All of this metal is protected with red lead treatment before shipment and then is field-painted by the owner in any manner desired. All columns, gutters and eave plates are galvanized as additional protection against rust.

The variable conditions faced in the shape of sludge-bed areas are easily cared for with the minimum of redesign of American-Moninger glass houses. Careful study has been made of the ventilation problem, and where a wide house of 50 or more feet is desired, it has been found more effective to use two adjacent 25-foot spans than to use the wider span, although a structure equally strong can be built with the steel trusses used. In some cases where wider spans have been used, intermediate supports have been introduced, primarily for carrying crossbeams to which monorails are affixed for handling a trolley system to remove the sludge.

The illustration below shows the type of steel truss construction used in many American Moninger sludge bed covers. The steel truss construction is capable of almost infinite variety.



INTERIOR OF GREENHOUSE



University Street, Palo Alto, California.
Stanley Construction Company, Contractors
J. F. Byxbee, Jr., City Engineer

These broad, smooth streets *do* maintain property values

There is something about a concrete street that raises the standard of a community. Its perfect symmetry and smoothness—its acknowledged immunity from annoying repairs and costly maintenance—its cleanliness—these are qualities that individualize the street of portland cement concrete. Every property owner should bear these facts constantly in mind.

PORTLAND CEMENT *Association*

Concrete for permanence

33 W. GRAND AVENUE
CHICAGO

Do you mention THE AMERICAN CITY? Please do.

THE BURROUGHS TYPEWRITER TAX MACHINE

Tax Billing by Machine

Not only does the Burroughs typewriter tax machine, made by the Burroughs Adding Machine Co., Detroit, Mich., write the tax bill and tax roll in one operation, entering names, addresses and descriptions, but it handles all extensions by direct multiplication, which is much faster than the repeated addition method common to most machines of this type. The writing of the tax roll is an automatic by-product of the billing procedure.

All extensions and totals are printed directly from the computing mechanism, thus eliminating the possibility of error which exists when amounts must be copied figure by figure. When the bottom of the tax roll sheet has been reached, it is necessary only to multiply the accumulated valuation by the various rates and check the results against the proof totals accumulated in the machine. This proves all calculations. Several carbon copies of the tax roll and bills may be written if required.

The machine is equipped with a special type of carriage that permits quick insertion and removal of bills without disturbing the tax roll, which remains in the machine until it is filled. The bill is merely placed on a flat surface and is automatically aligned to the correct writing position. All carriage tabulations are automatic. After the complete bill has been written, the carriage electrically returns and spaces up to the next printing position.

In addition to computing and writing the tax roll and tax bills, the machine may, if desired, be used on such work as writing the assessment roll, writing and computing tax abstracts, budgetary accounting, utility billing, prorating and other distribution work, miscellaneous multiplications and all kinds of vertical and horizontal listing and adding.

Wynes Joins Gamewell Sales Staff

The Gamewell Co., Newton, Mass., has appointed J. A. Wynes as Sales Engineer at its office in the Praetorian Building, Dallas, Texas. Mr. Wynes has previously been connected with the Bell Telephone Co. in Iowa, Western Electric Co., and the Harrington-Seaberg Corp., having traveled extensively in municipal work in the Southwest.

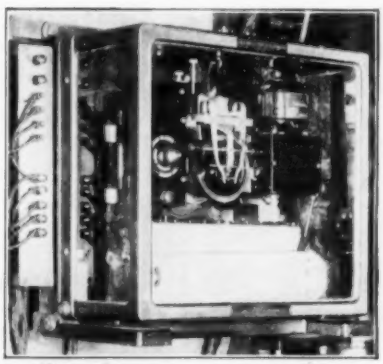
Smoke Recorders for Municipal Power Plants

A typical installation of an L. & N. smoke recorder made by Leeds & Northrup Co., 4901 Stenton Avenue, Philadelphia, Pa., consists of a measuring chamber at the stack or breeching, a recorder at any convenient location, and an indicator at the boiler.

The measuring chamber through which the smoke passes contains a lamp at one end and a specially constructed, temperature-compensated thermopile at the other end. Heat radiated from the lamp passes through the smoke-filled chamber and falls on the thermopile. With a constant heat-source in the lamp, the amount of heat falling on the thermopile is inversely proportional to the density of the smoke. The heat from the lamp which reaches the thermopile causes it to generate a voltage. The measurement of this voltage is the measure of the density of the smoke.

The recorder is a standard L. & N. potentiometer recorder. It measures the voltage of the thermopile and reads directly in per cent smoke density or Ringelmann chart numbers.

The boiler-room indicator is a bank of five lamps. The color of the lamp burning instantly tells the fireman the smoke conditions in the stack.



THE L & N SMOKE RECORDER

The apparatus is simple, reliable and fool-proof. A specially constructed thermopile is used as the detecting element, and the density measurement is not affected by line voltage fluctuations. The sampling system of which the measuring chamber is a part, is easily installed, requires very little attention and provides a ready means for obtaining a condition of zero smoke density for purposes of checking.

More Powerful Engines for New Mowers

The new line of power lawn mowers recently introduced by the Ideal Power Lawn Mower Co., of Lansing, Mich., incorporates many changes in power mower construction. Both the wheel-type mowers, which are made in 20 and 25-inch sizes, and the roller-type mowers in 22 and 30-inch sizes, are equipped with more powerful engines. The engine is a 4-cycle type using a high-compression cylinder, large valve passages and mechanically operated inlet and exhaust valves. It develops 2¼ to 3 horsepower at 1,350 r.p.m., depending upon the size, and with the mower traveling at a fast walking speed of 3½ miles per hour. Another interesting feature of these mowers is the generous use of aluminum for base, crankcase mufflers and other parts, making a large saving in weight.

A new power putting-green mower has also been placed on the market by this company. Instead of lightening and speeding up the ordinary power mower, a light hand type putting-green mower has been motorized. It is very light in weight and can be turned around on the most delicate turf without possibility of injury. Power is applied directly to the cutting reel and then through gears to the traction roller. In this way the reel is actually tractor-driven, insuring smooth cutting even on sharp rises or in heavy work, reducing wear on gears and eliminating all chance of scuffing.

Built on the principle of the Bulldog fairway mower, the new Ideal rough mower has a special adjustment to allow a cutting height for any length of rough preferred.

To provide the closer, smoother cutting that is necessary for the better fairways found in the majority of clubs, many of which are now of bent grass, all Ideal Bulldog fairway mowers are equipped with a new, improved cutting unit of seven blades which greatly increase the frequency of cut, so that even on fine bent fairways the Bulldog does clean, even work. The bottom knife and reel blades are now manufactured of a new special formula that is of uniform hardness throughout, giving longer wear and more perfect cutting.

THE IDEAL 30-INCH ROLLER TYPE MOWER

MICHIGAN AVENUE, CHICAGO, ILL., looking south from Superior Street. Trinidad Native-Lake Asphalt laid in May, 1919

A decade of service in Chicago traffic!

A worthy record, you'll admit. Paving *must* have durability to stand up under 24-hour-a-day pounding of traffic on one of the world's busiest thoroughfares.

It's the same story the world over—city or town—Trinidad stands the gaff. Wherever it is laid, Trinidad demonstrates its resistance to wear, its immunity to attacks of weather—its natural superiority to any man-made bituminous paving material.

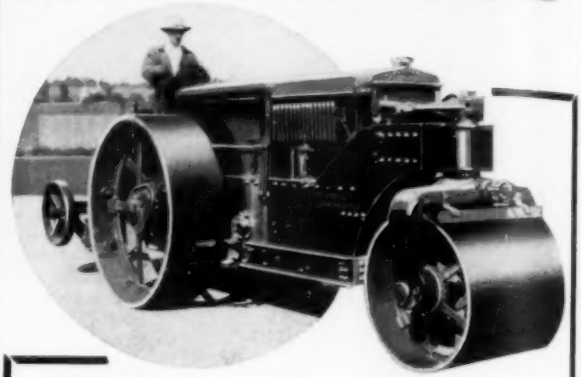
For road building—Bermudez Road Asphalt—another Native-Lake Asphalt—has demonstrated its merit. Write for interesting facts.

THE BARBER ASPHALT COMPANY

New York PHILADELPHIA Chicago
St. Louis Kansas City San Francisco

TRINIDAD NATIVE LAKE ASPHALT

BUFFALO-SPRINGFIELD



When there is a time limit to consider . . . When every hour lost is usually a serious matter . . . Then does the contractor appreciate the rugged reliability of his Buffalo-Springfield roller.

Whether on new construction or maintenance, the Buffalo-Springfield develops the flawless performance that meets every requirement with true economy.

Built in a wide range of sizes. Steam and motor driven. Three-wheel and tandem. Scarifier and other attachments optional. Write for illustrated booklet.

THE BUFFALO-SPRINGFIELD ROLLER CO.
SPRINGFIELD, OHIO

A Valuable Feature in Municipal Service

This truck is spreading top dressing. Note that the Wood all-steel dump body is maintained in the position shown, while the truck moves forward. This is made possible by the ball-check pump of the Wood Underbody hoist. It automatically holds the body at any desired angle *and keeps it from drifting down* while controls are shifted. This is but one of the features of Wood Hoists which have won world leadership because they are so practical, efficient and economical in any dumping service. Get the facts on Wood Hoist and body efficiency in your service.

WOOD HYDRAULIC HOIST & BODY CO.,
Detroit, U. S. A.

Branches and Distributors in Principal Cities

THE WORTHINGTON MODEL A LAWN TRACTOR

A 1931 Model Lawn Tractor for Parks and Golf Courses

Immediately upon the appearance of the new Ford Model-A engine, the Worthington Mower Co., Stroudsburg, Pa., equipped a Worthington lawn tractor with one for experimental purposes in place of the old Model T. After a long period of test in actual service, it was shown to be in many respects a better engine for lawn-mower work than the old.

The 1931 Model A tractor, which is patented, weighs 1,350 pounds. It is constructed entirely independent of the cutting units and may be disconnected from them at once and, without any change whatever, is ready to do any kind of work ordinarily performed upon the golf course by the horse.

The tractor draws the mower behind it. It is equipped with a self-starter as standard equipment and may also be furnished with front and rear lights, which enable the mowing to be conducted as well by night as by day. In many cases this has proved of great convenience. The midday heat may thus be avoided, as well as all interruptions to the cutting operation by the players.

Spiral Welded Pipe in Lengths Up to 40 Feet

Among the favorable features to be found in the new Armco spiral welded pipe, made by the American Rolling Mill Co., Middletown, Ohio, is the lighter weight, easier handling, long sections which reduce the number of field joints, smooth inside wall which reduces friction and pumping costs, and the saving in shipping and handling costs.

At one of the process stages of the continuous sheet mill, great strips of metal, as long as 200 feet and of 10-gage or heavier, come from the strip mill and are rapidly wound into coils. These are placed in a decoiling device on one end of the pipe machine, which is one compact, self-contained production unit. The coil is unwound and flattened and then proceeds through the forming rolls and is welded. The spiral seam is produced by feeding the strip into the machine at an angle of approximately 45 degrees. The great length of the coil of metal eliminates the necessity of frequently stopping the machine to add new stock, and a cut-off mechanism synchronized with the speed of the welded pipe assures accurately gaged lengths.

The spiral welded pipe is next taken to a testing machine where it is subjected to tests at twice the safe working pressure.

Armco spiral welded pipe is manufactured in jointless lengths up to 40 feet. Every joint is round, straight, smooth inside and light in weight. There are no interior grooves or ridges to catch sediment or debris or to increase friction. Every ounce of metal is used to form the side walls, and there are no projecting bands or seams to add weight. It is easy to weld and can be used with any of the standard couplings. The pipe is supplied in sizes from 6 to 24 inches in diameter, in any wall thickness from 12-gage to ¼ or ⅜-inch. It can be furnished with any type of coating desired, mill coat, asphalt inside and out, or galvanized.

Burch Joins Wire Reinforcement Institute

Announcement has been made by the Wire Reinforcement Institute, National Press Building, Washington, D. C., that James S. Burch has been appointed Research Engineer. Mr. Burch was formerly a member of the Technical Staff of the American Road Builders' Association, acting as investigator for the Association's Special Committee on Subgrade and Pavement Bases.

The Wire Reinforcement Institute, under the direction of Royall D. Bradbury, provides a centralized organization to promote the technical and utilitarian merits of electrically welded wire fabric as used for reinforcement in concrete pavement and for building construction.

A Pressure Sprayer for Asphalt Emulsion Maintenance Work

A pressure sprayer, whether of the hand or power type, adds materially to the convenience and economy of applying asphalt emulsions in maintenance work, as it makes practicable the application of the emulsion direct from the steel drums to the surface to be treated. Flintkote Roads, Inc., 100 East 42nd Street, New York, has developed a pressure sprayer unit with a cradle to carry the 55-gallon steel drum of emulsion on three wheels. The machine is equipped with a strong, low loading lip, reinforced heads, a head clamping device, a large-capacity air pump, air hose, pressure gage, screened siphon tube, a discharge hose, drop nozzle and spray head. A pin insert for the drawbar together with a balanced chassis makes loading easy, and the connections are arranged so that loading and connecting require but a few seconds and no tools but a wrench are required to remove the barrel plug. The machines are arranged for use with standard 2-inch side-bung steel drums and are shipped complete with all parts and full instructions, ready for immediate use.

This is a light, mobile and inexpensive outfit and is especially adapted for the application of Colas. It is a convenient unit and effects real economy in the maintenance of highways, streets and drives and in the widening of pavement and macadam. Where application by large motor-truck sprayers is not practicable or convenient, it frequently saves them many miles of operation or difficult and expensive manipulation.

THE FLINTKOTE PRESSURE SPRAYER
Loading a drum of emulsion

Outdoor Lighting

A Section of *The American City*
Devoted to the Lighting of Streets, Highways, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

Brightest Streets

INTENSITY of light is by no means the sole criterion of street-lighting effectiveness; but with increased emphasis on direct illumination as the method of discerning objects on the streets at night, rather than such indirect means as by silhouette, shadow or glint it has seemed well worth while to ascertain the practice of the 37 cities over 250,000 in population in regard to their streets of greatest illumination from street lamps. The resulting information is given in the accompanying table, which also includes ten other cities of smaller population known to have streets with lighting intensities of 500 lumens, or more, per linear foot of street. Valuable assistance was received from various sources besides the cities addressed, including a compilation of "Representative Street Lighting Installations" issued in 1930 by the Street Lighting Committee of the National Electric Light Association, which gave data for twelve of the cities concerned; and the street-lighting departments of leading lamp manufacturers.

THE PUBLIC SQUARE, CLEVELAND

The column showing lumens per linear foot of street presents a rough basis of comparison, from the standpoint of lumens "expended" for lighting purposes. It should not be used as an accurate means of grading cities or installations, as even where it can be computed from exact data, it takes no account of effectiveness of distribution of light, proper placing of units, or glare, nor, of course, attractiveness of design; and lumen output varies with age and cleanliness of lamps and glassware. Furthermore, one brightly lighted street does not necessarily mean a well-lighted city. With these limitations in mind it is interesting to note that the lumen output per foot of street ranges from 2,040 to 104, among the 37 largest cities. The mini-

(*Text continued on page* 185)

Chicago, Cleveland and Detroit photographs by courtesy of Street Lighting Committee, National Electric Light Association

DAY VIEW OF STATE STREET, CHICAGO

STREETS OF GREATEST ILLUMINATION FROM STREET LAMPS

City	Population	Street	Type of Luminaire	Lumens and Watts or Amperes per Lamp	Lamps per Post	Mounting Height of Lamps	Type of Post	Arrangement of Posts	Width of Street Between Bldg. Lines	Width of Street Between Curb Lines	Length of Street so Lighted	Distance between Posts, Along Street	Lumens per Linear Foot of Street	Method of Financing
Akron, Ohio	255,040	S. Main St. Market to Chestnut	Upright, luminous arc, G. E. Form 10	15,000 l. 6.6 a.	1	14'6"	Union Metal No. 1523	Opposite	124'	84'[1]	3,700'	75'	400	Lighting company[2]
Atlanta, Ga.	270,366	Whitehall & Peachtree Streets	Upright, G. E. Novalux Form 12	9,500 l. 500 w.	2	12'	Cast Iron	Opposite			1½ miles	80'	475	Installation by special assessment; operation from general taxes
Baltimore, Md.	804,874	Baltimore St.	Upright, G. E. Novalux Form 9, with refractor	15,000 l. 20 a.	1	15'	Cast iron ornamental, Baltimore design	Staggered	66.5'	39.5'	5 miles	52'	288	General taxes
Birmingham, Ala.	259,678	First Ave. N.	Upright medium alabaster globe	9,500 l.	1	18'	Pressed steel	Opposite	100'	70'		100'	190	General taxes
Boston, Mass.	781,188	Boylston St.	Upright, Novalux Form 9, No. 107 rippled glass globe	15,000 l. 20 a.	1	18'	Lundin No. 5050 ornamental	Opposite	80' 123'	50' 93'	1,267' 926' 2,193'	70'	430	General taxes
Buffalo, N. Y.	573,076	Main St.	Upright, luminous G. E. arc, rippled globe	16,700 l. 528 w. 6.6 a.	3	23'4"	Heavy-duty combination trolley, Union Metal	Opposite	99'	58'	6,160'	99.4'	1,008	Lighting company; posts furnished by business men's association
Cambridge, Mass.	113,643	Massachusetts Ave.	Upright globe G. E. Form 12	15,000 l.	2	22'	Pressed steel Union Metal	Opposite	110'	70'	2,000' + Central Sq.	78.4'	765	Lighting company
Chicago, Ill.	3,376,438	State St., Lake St. to Van Buren	Upright, G. E. Novalux Form 12, rippled globe No. 126, and glass canopy	45,000 l. 2,000 w.	2	27'9"	Union metal ornamental standards encasing trolley poles	Opposite	120' (Lake to Madison) 70' (Madison to Van Buren)	70' 60'	3,080'	88'	2,040	Merchan's' association (first cost and 10 years' operating cost)
Cincinnati, Ohio	451,160	Central Parkway	Upright bronze lantern.	40,000 l. 20 a.	1	20'	Westinghouse, special ornamental cast iron	40,000 l. in center	152'	122'	3,000'	150'	347	General taxes
			Upright, Westinghouse Paragon Senior	6,000 l. 20 a.	1	15'		6,000 l., opp., along curb						
Cleveland, Ohio	900,429	Public Square	Upright globe, internal symmetric refractor	33,000 l.[4]	2	28'9"	Pressed steel Union Metal combination trolley	Opposite	120'	80'		70'	1,500	General taxes
Columbus, Ohio	290,564	Business District	Upright, G. E. medium No. 118 and canopy	15,000 l.	2	20'	Pressed steel	Opposite	103'	66'	6,800'	100'	600	80% property owners; 20% special assessment
Dallas, Texas	260,473	Pacific	G. E. Form 12, No. 104 globe	10,000 l.	1	12'	King No. 61	Staggered	100'	75'	3,000'	40'	250	
Denver, Colo.	287,861	15th St.	Upright, G. E. Form 16, No. 107 Globe with No. 1107 canopy	9,500 l. 500 w.	1	17'6"	King No. 1015 trolley pole brackets	Opposite	80'	50'	13 blocks	85'	223	Merchants
Detroit, Mich.	1,568,662	Washington Blvd.	Upright, G. E. modified Novalux Form 12, with No. 169 medium rippled globe	20,200 l. 1,000 w.	5	32'1) 27'4)	King cast iron with steel pipe core	Opposite and in parkway	200'	150'	1,525'	108'	1,870	Above ground by property owners. Underground by city. Operation from taxes
		Woodward Ave.	Pendent, G. E. Novalux Form 32B, with No. 157 medium rippled globe	45,000 l. 2,000 w.	2	28'7½"	Union Metal heavyduty fluted steel trolley pole, cast steel base and C. I. top	Opposite	120'	80'	3,400	92'	1,940	Above ground by merchants; underground by city. Operation from taxes
El Paso, Texas	102,421	Business Section	Arc		2	20		Staggered				55'	500	
Fall River, Mass.	115,274	Pleasant St.	Upright alabaster globe	15,000 l.	2	16'1"	Cast iron	Staggered	60'	42'		58'	518	Lighting company
Forest Park, Ill.	14,555	Madson	Upright, light alabaster globe, internal asymmetric refracter	10,000 l.	2	16'	Pressed steel and iron, combination trolley	Opposite	60'	40'		66'	606	Installation by special assessment; operation from general taxes
Fort Wayne, Ind.	114,946	Calhoun St. Columbia St. to Jefferson St.	G. E. Form 32B with No. 157 globes	25,000 l.	2	23'8"	Union Metal heavyduty fluted steel, trolley; ornamental brackets	Opposite	65'	45'	1,860'	93'	1,075	Special assessment for installation; maintained from general taxes
Houston, Tex.	292,352	Main St.		10,000 l.	2	20'		Opposite				80'	500	

STATE STREET, CHICAGO, AT NIGHT

(ABOVE) FIFTH AVENUE, NEW YORK, BY NIGHT

(UPPER LEFT) WASHINGTON BOULEVARD, DETROIT, BY DAY

(LOWER LEFT) WASHINGTON BOULEVARD, BY NIGHT

City	Population	Street	Type of Luminaire	Lumens and Watts or Amperes per Lamp	Lamps per Post	Mounting Height of Lamps	Type of Post	Arrangement of Posts	Width of Street Between Bldg. Lines	Width of Street Between Curb Lines	Length of Street so Lighted	Distance between Posts, Along Street	Lumens per Linear Foot of Street	Method of Financing
Indianapolis, Ind.	364,161	Washington St.	G. E. F-9	10,000 l. 20 a.	2	20′	Union Metal ornamental	Opposite	120′	90′	1 mile	100′	400	General taxes
Jersey City, N. J.	316,715	Veterans Sq. Plaza	Pendent, Westinghouse Luxolite	15,000 l. 20 a. 750 w.	2	28′	Steel, with brackets	Opposite	210′	186′	300′	100′	600	General taxes
Kansas City, Mo.	399,746	12th St.	G. E. Novalux No. 124	15,000 l.	2	19′	Iron trolley poles	Opposite	60′-82′	38′	1,600′	82′	732	General taxes
Kenosha, Wis.	50,262	Business District	Upright, Westinghouse Paragon senior, Bilux refractor	15,000l. 750 w.	2	18′6″	Westinghouse Hollowspun Sheridan 24, granite, combination trolley	Opposite	60′	40′	1 mile	100′	600	Lighting company
Los Angeles, Calif.	1,238,048	Wilshire Blvd., Park View St. to Fairfax Ave.	Upright, special G. E. Lantern	6,000 l. 20 a. 25,000 l. 20 a.	2 (in single lantern)	22′5″ 21′7″	King, cast iron, electroplated	Opposite		100′	5 miles	127′	393	Special assessment
Louisville, Ky.	307,745	4th St., Water St. to Kentucky St.	Upright, Westinghouse octagonal reflector Lux. bracket type	6,000 l. 20 a.	1	18′	Combination trolley pole	Opposite	60′	36′	7,300′	100	120	General taxes
Memphis, Tenn.	253,143	Union Ave., Hernando to Myrtle	Pendent. Line Material Co.; 4-11 reflectors	9,500 l. 500 w.	1	23′	Concrete, 30″ arm	Opposite	66′	54′	3,850′	183′	104	First cost, special assessment; annual cost, taxes
Milwaukee, Wis.	578,249	East Wisconsin Ave.	Pendeat, Holophane satin finish bowl-type asymmetric refractors	15,000 l. 20 a.	2	30′	Westinghouse Hollowspun Concrete	Opposite	100′	60′	½-mile	180′	333	80+ general taxes 20+ by merchants on installation annual cost, both
Minneapolis, Minn.	464,356	Nicollet Ave., Washington Ave. to 10th St.	Upright, G. E. Novalux Form 9, No. 126 light opal globe	14,700 l. 750 w.	2	23′	Crown Iron Wks. pipe support, cast iron base, shaft, brackets	Opposite	80′	50′	3,500′	135′	435	Special assessment
Newark, N. J.	442,337	Springfield Ave.	Pendent, G. E. Novalux Form 6, No. 116 opal tinted ripple glass globe	10,000 l. 520 w. 20 a.	2	22′	Hollow iron combination trolley post	Opposite	66′	40′	3,200′	110′	364	General taxes

City	Population	Street	Type of Luminaire	Lumens and Watts or Amperes per Lamp	Lamps per Post	Mounting Height of Lamps	Type of Post	Arrangement of Posts	Width of Street b. Between Bldg. Lines	Width of Street b. Between Curb Line	Length of Street so Lighted	Distance between Posts, Along Street	Lumens per Linear Foot of Street	Method Financing
New Orleans, La.	458,762	Canal St., River to Claiborne Ave.	1 Upright G. E. Novalux Form 12; 2 pendent Form 32B	21,000 l. 1,000 w.	3	31′ 25′	Union Metal heavy duty	Opposite	170′6″	128′6″	1.05 miles	103′	1,223	General taxes
New York, N. Y.	6,930,446	Fifth Ave. (Manhattan)	Pendent, light carrera glass globe with 7″ reflector inside	7,440 l. 400 w.	2	18′	Steel pipe, ornamental iron castings wrought iron scrolls	Staggered	100′	55′	5¼ miles	87′	171	General taxes
		Queens Blvd. (Queens)	Same as Fifth Ave.	5,280 l. 300 w.	2	23 6	Same as above with trolley brackets	Opposite	200′	160′	13 miles	100′	211	General taxes
Niagara Falls, N. Y.	75,460	Falls St.	Upright, G. E. lunimous arc	12,300 l. 532 w. 6.6 a.	2	20′	Elreco	Opposite	80′	60′	3,000′	90′	547	Half installation cost special assessment; rest from taxes
Oakland, Calif.	284,063	Business District [6]	Upright, G. E. No. 118 medium alabaster rippled glass globes	15,000 l. 20 a.	2	20′	Cast iron with inner steel reinforcing tube	Opposite	80′— 110′	52′— 72′	6.72 miles	105′	571	Special assessment
Philadelphia, Pa.	1,950,961	Market St. River to City Hall	Pendent, Phila. Elec. Co. special, medium rippled globe	10,000 l. 5.5 a.	2	18′	Twin lamp standards	Opposite	100′	62′	5,900′	133′	300	General taxes
Pittsburgh, Pa.	669,817	Federal St.	Pendent, G. E. Form 32 with G. E. No. 145 diffusing globe	10,000 l. 580 w.	1	17′	Tubular steel trolley poles with G. E. Pemco brackets	Opposite	80′	60′	4,590′	85′	235	General taxes
Portland, Ore.	301,815	Business District	Upright, G. E. Novalux	15,000 l. 6,000 l.	2	15′	Union Metal	Opposite	80′	60′	6 miles	100′	420	Special assessment
Providence, R. I.	252,981	Exchange Place	Upright, magnetite arc	13,700 l. 6.6 a.	1	14′2″	Locally cast columns	Staggered	95′	75′	1,880′	42′	326	Lighting company
Rochester, N. Y.	328,132	Main St., Broad to East Ave.	Upright, G. E. inverted magnetite arc	12,300 l. 6.6 a.	2	18′6″	Union Metal	Staggered	96′-100′	60′	4,050′	40′	615	Note 8
St. Louis, Mo.	821,960	Olive St.	Upright, Westinghouse St. Louis pattern	15,000 l. 20 a.	2	25′	Westinghouse Hollowspun Granite	Opposite	60′-100′		2,700′	87′	690	Bond issue
St. Paul, Minn.	271,606	Sixth St. Third St.	Upright	19,600 l. 500 w.	2	23′	Union Metal twin standards with steel pipe core	Opposite	60′ 128′	40′ 98′	1-mile	100′	784	Installation special assessment; maintenance, taxes
Salt Lake City, Utah	140,267	Business District	Luminous arc	13,700 l.	3	22′	Ornamental steel casing over trolley pole	Opposite	132′	90′	15,000′	110′	747	88⅔% special assessment, 12⅓% general taxes
San Diego, Calif.	147,995	Broadway	Upright, G. E. Form 12, No. 118 Globe, with canopy; film refractor	10,000 l.	2	24′	Union Metal	Opposite	100′	68′	5,700′	80′	500	Special assessment
San Francisco, Calif.	634,394	Market St.	Arc		3	30′		Opposite				110′	750	
Schenectady, N. Y.	95,692	Erie Blvd.	G. E. Form 21 luminous arc, No. 126 globe	16,875 l. 6.6 a.	2	20′	King cast iron	Opposite [7]			2,087′	140′	700	Lighting company
Seattle, Wash.	365,583	2nd Ave.	Upright, medium alabaster globes (G. E. No. 124 and Line Material No. 10111); canopies	9,800 l. 500 w.	3	21′11″ 23′8″	Ne Page-McKenny, bronze filled with concrete; also Union Metal 3″ steel pipe, bronze base and top	Opposite	90′	51′	16,600′	78′	754	Installation special assessment; operation from taxes
Toledo, Ohio	290,718	Summit St.	Pendent, arc	6,000 l.	2	16′	Ornamental iron	Opposite	80′	48′	3,000′	75′	320	15⅔% by City, 85⅓% special assessment
Washington, D. C.	486,869	15th St.	Upright, magnetite arc	11,200 l. 6.6 a.	2	21′	Semi-steel	Staggered	110′	70′	830′	74′	305	Appropriation by Congress

[1] Mill St. to Market St., about 900 ft. Width varies in other portions (min. 68′). [2] Excess of operating cost above normal, paid for by special assessment. [3] Part of installation cost assessed against abutting property. [4] 15,000 lumen lamps used in some parts of the Square. [5] 25,000-lumen lamps used up to midnight, 6,000-lumen lamps after. [6] Parts of Clay St., Washington St., Broadway, San Pablo Ave., Franklin St., Webster St., Harrison St., 11th St., 12th St., 13th St. and 14th St. [7] Curb standards opposite on 140′ spacing, center standards staggered with respect to curb standards. [8] 52.3% of installation cost from local assessment, 47.7% from general fund. Equipment owned, maintained and operated by lighting company.

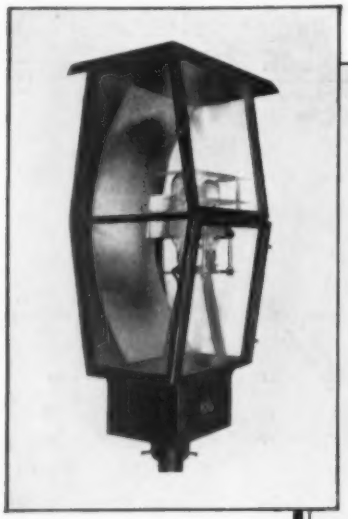
mum recommendation for retail business streets in the code of street lighting of the Illuminating Engineering Society Committee on Street Lighting is equivalent to 67 lumens per foot, and 133 for heavy-traffic thoroughfares. These recommendations are on the basis of the most effective equipment and use; for upright units more lumens would be needed than for pendent units. The minimum recommendation for mounting height is 18 feet, with 20 feet much preferred. In eleven instances herewith the height is given as less than 18 feet.

Most of the data was received directly from the cities concerned, the types of equipment not being uniformly described. The make of equipment is included in those cases where the cities reported it.

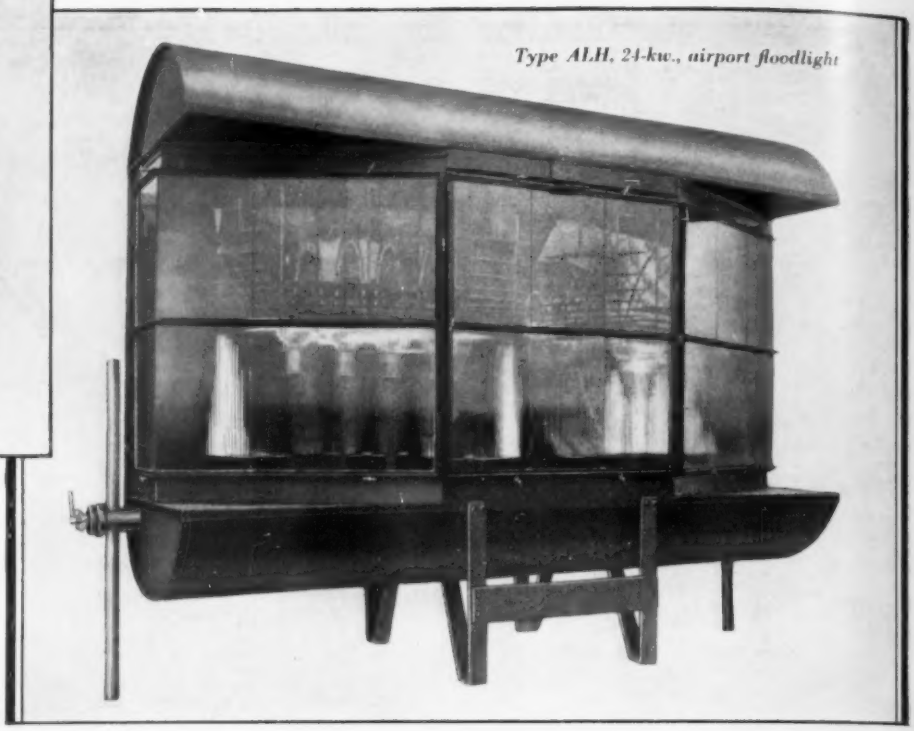
The famous "Great White Way" of Broadway, New York, depends on electric signs rather than street lamps, that city's policy in street lighting being for relative uniformity.

CANAL STREET, NEW ORLEANS, BY DAY

For night view see page 143



Type ALH, 3-kw., airport floodlight



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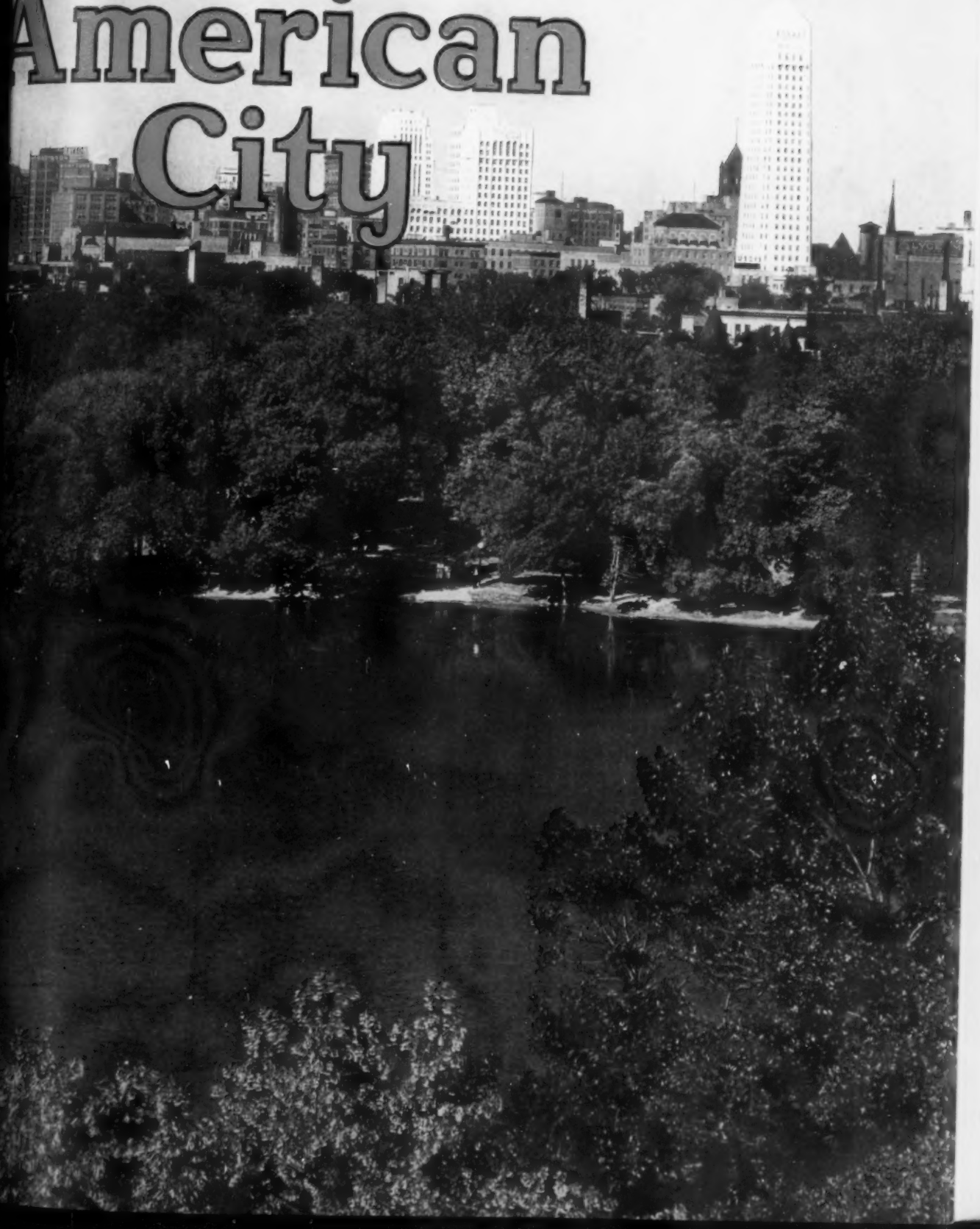

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Town Lake
e article on page 94)